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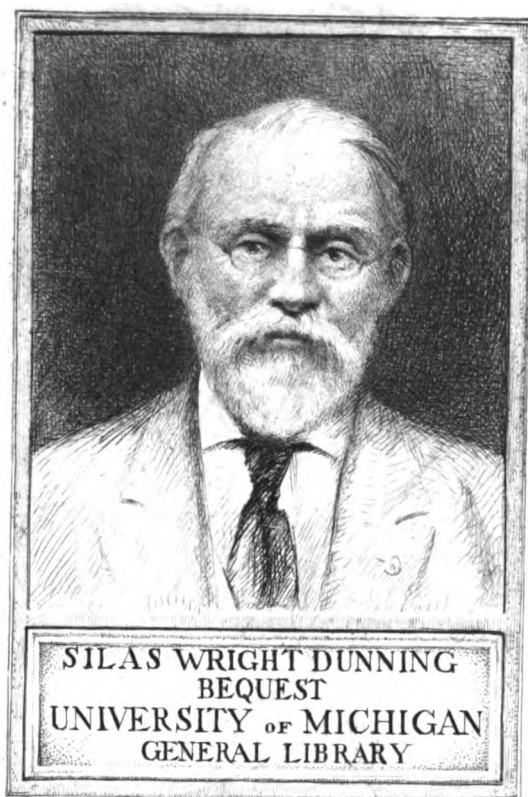
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**United Service Institution**  
**of India**

**Vol. XLI**

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# Journal of the United Service Institution of India.

Vol. XLI—1912.

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# United Service Institution of India.

## GOLD MEDAL ESSAY COMPETITION.

The Council have chosen as the subject for the Gold Medal Essay for 1912-13 the following :—

“Examine the application of the main principles laid down in Field Service Regulations I, Chapter VII (The Battle) to the conditions of a campaign in a terrain similar to that of Baluchistan and Afghanistan, against an army organised on modern principles.”

The following are the conditions of the competition :—

- (1) The competition is open to all gazetted officers of the civil administration, the navy, army, or volunteers.
- (2) Essays must be printed or type-written and submitted in duplicate.
- (3) When a reference is made to any work, the title of such work is to be quoted.
- (4) Essays are to be *strictly anonymous*. Each must have a motto, and enclosed with the essay there should be sent a *sealed* envelope with the motto written on the outside and the name of the competitor inside.
- (5) Essays will not be accepted unless received by the Secretary on or before the 30th June 1913.
- (6) Essays will be submitted for adjudication to Referees chosen by the Council. No medal will be awarded if the Council consider that the best essay is not of a sufficient standard of excellence.
- (7) The name of the successful candidate will be announced at a Council Meeting to be held in August or September 1913.
- (8) All essays submitted are to become the property of the United Service Institution of India *absolutely*, and authors will not be at liberty to make any use whatsoever of their essays without the sanction of the Council.
- (9) Essays must not exceed 15 pages of the size and style of the Journal, exclusive of any appendices, tables, or maps.

By order of the Council,

SIMLA :  
1st July 1912. }

C. F. ASPINALL, CAPTAIN,

Secretary, U. S. I.

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# UNITED SERVICE INSTITUTION OF INDIA

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JANUARY, 1912.

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## SECRETARY'S NOTES

### I. NEW MEMBERS.

The following Members have joined the Institution during the months September—December, 1911 :—

Lieut. E. G. Hume.  
Capt. H. Medicott.  
Maj. D. Sladen.  
Maj. A. E. Glasgow.  
Maj. H. A. Carr.  
Maj. J. W. Leather.  
Maj. M. J. F. FitzGerald.  
Capt. A. S. Evans.  
Maj. B. Holbrooke.  
Lieut. J. Turner.  
Capt. C. M. Wagstaff.  
Lieut. M. E. Parnell.  
Maj. A. de C. Rennick.  
Capt. L. E. Warren (Life Member).  
Maj. H. M. Souter.

Maj. W. J. H. Hunter.  
Lieut. C. A. Raynor.  
Maj. R. C. Harbottle.  
Capt. J. E. Colenso.  
Maj. L. J. Chapman.  
Capt. J. H. McCudden.  
Lieut. E. L. G. Whitting.  
Capt. G. C. Clarke.  
Maj. C. L. Perrin.  
Maj. H. L. Anderson.  
Maj. T. D. Bullen.  
Maj. R. Muter, R.E. (Life Member).  
Capt. A. D. Murray (Life Member).  
Capt. E. B. Maunsell.

### II. GOLD MEDAL ESSAY COMPETITION, 1910-1911.

The subject of the Essay was :—

“ The Maintenance of Law and Order in India considered in relation to the mutual co-operation of the civil and military powers in the country.”

Fourteen Essays were submitted, and the Gold Medal was awarded to Mr. D. Petrie, M.A., Punjab Police.

Essays by the following five officers were specially commended, viz., Captain Mark Sygne, Captain S. de V. Julius, Captain E. R. Hayes-Sadler and Mr. H. C. Woodman, I.C.S.

The adjudicating officers were Lt.-Genl. Sir P. H. N. Lake, K.C.M.G., the Hon'ble Sir B. Robertson, K.C.I.E., I.C.S., Bde.-General A. Hamilton-Gordon, C.B., and Sir C. R. Cleveland, K.C.I.E., I.C.S.; and the Hon'ble Sir J. L. Jenkins, K.C.S.I., I.C.S., acted as referee.



### III. TACTICAL SCHEMES.

To assist officers studying tactics, tactical schemes are issued, by the Council of the Institution, to members only, on the following terms :—

Rupees 5 per scheme, or Rs. 50 for a complete series of ten schemes, these charges including criticisms and solutions by a fully qualified officer selected by the Council.

Two sets of schemes (10 schemes in each series), revised to 1911, are now available, and an entirely new series (Series VI) is in process of preparation, of which six problems are ready for issue.

A number will be allotted to each member applying for papers, and solutions must be sent under these numbers to the Secretary, United Service Institution of India, Simla.

### IV. MILITARY HISTORY PAPERS.

In order to assist candidates for the Staff Colleges, and other officers, in the study of military history, the Council of the Institution have decided, as a tentative measure, to issue, to members only, sets of questions on selected campaigns. The following papers are now available :—

- (a) Two sets of six questions each on Callwell's Small Wars.
- (b) Two sets of six questions each on the strategy of the Russo-Japanese War.
- (c) Three sets of six questions each on the battles of the Russo-Japanese War.
- (d) Two sets of six questions on the Afghan War, 1878—80.

The charge for these papers is Rs. 5 each, including criticism by fully qualified officers selected by the Council.

A number will be allotted to each member applying for papers, and solutions must be sent under these numbers to the Secretary, United Service Institution of India.

### V. CHANGES OF ADDRESS.

Besides keeping the Secretary informed of all changes of rank and title, members are particularly requested to notify any change of address.

### VI. LIBRARY CATALOGUE.

The price of the new catalogue is Re. 1.

### VII. GOLD MEDAL ESSAY, 1911-12.

The Council have selected the following as the subject for the Gold Medal Essay Competition for 1911-12.

"It appears to be generally recognised that the three principles of sea command, self-defence, and mutual support must be the basis of any sound system of Imperial Defence." \* (Page 33, Imperial Conference on the Naval and Military Defence of the Empire, 1909.)

Discuss the responsibility of India in regard to the use of her existing military forces in giving effect to the above principles.

The attention of competitors is drawn to the addition made to the conditions in the slip published with the July Journal. (9 Essays must not exceed 20 pages (exclusive of tables of the size and style of the Journal).

Further details can be obtained on application to the Secretary.

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\* Correspondence and Papers on the Naval and Military Defence of the Empire, 1909. Printed by Darling & Son, 34-40, Bacon St., London E. Price, 6d.

# THE JOURNAL

OF THE

## United Service Institution of India.

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### THE GUNS OF A DIVISION IN ACTION.

BY LIEUT.-COLONEL E. NORRIS, R.F.A.

Twenty or thirty years ago it was held that reserve artillery was utterly out of place on a modern battlefield; every gun should be deployed for the artillery duel at the earliest opportunity. But it would seem that under the latest circumstances reserve artillery will reappear. Two great factors have combined to bring this about, the invention of a real Q.-F. gun, and the great increase in the number of guns as compared with rifles in all modern armies. There is however actually a great difference between the old "reserve artillery" and the modern "artillery reserve." The former is never likely to reappear in any army organization, the tendency being to associate guns more closely with rifles than ever, and artillery units outside the divisions are now generally only those specially equipped. But on the field of battle in the future there probably will be an artillery reserve, just as there always must be an infantry reserve, during the earliest phases of the fight.

The large increase of guns referred to above might alone have brought this about, but it is chiefly due to the immense improvement in firearms, the latest development of which is a real quick-firing gun. We now have weapons capable of firing away a vast amount of ammunition in a comparatively short space of time, and such weapons cannot at all times be used up to their full capacity, because it is quite impossible to bring ammunition into the field, not to mention the firing line, in quantities sufficient for such continuously rapid fire. As a result there must often be a large part of any force superfluous for the immediate purpose in view, especially in the earliest stages of any fight, and consequently some guns as well as rifles can and should be kept in reserve until the

later stages are reached, when every gun and every rifle that can be assembled at some particular place is wanted, and wanted to pour as many well directed projectiles as possible upon the enemy, in order to secure that "superiority of fire" which will turn the scale and bring victory within reach.

For this supreme struggle we must undoubtedly bring into action at the decisive point every weapon—guns and rifles in proper proportion—which we can possibly get there, but for other purposes—in preliminary skirmishes, in feints, along false fronts, and generally during the development of any action—we need only employ power in arms, both guns and rifles, men, and ammunition, sufficient for the immediate object, keeping all the rest in readiness, if necessary, to augment the troops engaged in any particular operation, but more especially in reserve for the great fire fight, as fresh, mobile and efficient as possible. The strength of any such reserve naturally varies greatly during the various stages of the fight, and must depend upon all kinds of conditions—topographic, climatic, psychologic, and so on.

Now whatever the conditions may be in any particular action, we can always trace five phases or stages in every case. Sometimes one or other may be protracted, or may fail and cause the recurrence of an earlier phase, or may be passed through very rapidly so as hardly to appear. They are these:—

- (i) the preliminary encounter between protective troops;
- (ii) the advance of the infantry of the main body till it reaches the limit of hostile rifle fire;
- (iii) the further advance to those positions where the building up of great firing lines is possible;
- (iv) the fight in those positions for superiority of fire over the enemy; and, finally,
- (v) the assault, or crisis.

Naturally these phases often overlap or merge one into another, but each has distinctive features of its own. There are however permanent conditions which exist in all of the five phases, and these it would be better to consider first. We are of course considering the question from the artillery point of view, and the dominant condition is the fundamental rôle of field artillery. It is an auxiliary arm, and its one task is to support the infantry. There may be moments when for good reasons the infantry must help the artillery, and guns may at times have to play a more prominent rôle than infantry, but their task is essentially to support their predominant and (under fire) more mobile partner, and the greater the need the closer must be the support given.

The power to give this support is however limited by other circumstances, which the gunner has constantly to bear in mind, and the first of these is mobility. Loss of mobility may mean loss of power to continue to support the infantry as the fight progresses and as the latter advances, and that may mean the defeat of the infantry. Retention of mobility is therefore one great governing

factor which has to be constantly balanced against the necessity for supporting the infantry. In those phases of the battle when a subsequent advance will probably or possibly be required, retention of mobility must be ever present in the mind of an artillery commander, and frequently, when the dominant factor—support of the infantry—compels a certain amount of exposure and risk, it must cause him the gravest anxiety. But fortunately he will be able to do all that is required by using a small number of guns to their fullest capacity, thereby saving several other guns from such exposure and risk. Equal almost in importance with this retention of mobility comes the question of ammunition supply. We can indeed scarcely exaggerate the vast importance of economising ammunition, when it is borne in mind that modern guns can be fired at such a rate as would exhaust the whole of the ammunition taken into the field with an army, could such be brought alongside the guns, which in itself is another immense difficulty, in less than an hour, and that any one gun could use up the ammunition immediately available in the battery in a very few minutes. And, apart from the fact that the ammunition carried into the field is by no means enough for every possible contingency (*c.f.* Col. Roquerol's estimate) there is the other difficulty referred to above, namely, the actual supply of rounds to the guns in action, a difficulty which grows enormously if guns become exposed and lose their mobility.

We see then that the conditions which prevail throughout all phases of a fight, more or less according to circumstances, are these:—

- (1) The fundamental principle that guns must support the infantry at all times, and that the greater the need the closer must be the support.
- (2) To continue that support, retention of mobility is necessary especially in the earlier stages of a fight.
- (3) That while ammunition is limited in quantity the capacity of the gun for spending it is almost unlimited.
- (4) That when guns do, through misfortune or necessity, lose their mobility, actual ammunition supply becomes increasingly difficult.

But in consequence of the great capacity of the modern gun, far exceeding any reasonable demand (bearing 3 and 4 above in mind) which is likely to be made upon it during the earlier phases of a fight, a compensating condition may now be added; the reserve power inherent to each individual gun automatically creates a reserve of guns, which guns thus become available together with reserves of infantry for the great fire fight and the last crisis without incurring any unnecessary risks during the earlier phases.

Passing then to a more detailed consideration of our subject we come first of all to the engagement between the protective troops—whether such be advanced guards or outposts. If the respective forces are not quite small, there will probably be some guns on both sides, and their task will be to effect as much as possible with the

means at their disposal. There will be no question of reserving anything, each commander will act as vigorously as possible. The only limit to the enterprise of the artillery will be the necessity for retaining their mobility, for no artillery commander, whether general officer or section commander, should ever precipitate matters by the occupation of any position from which his guns cannot be withdrawn without a general engagement, when possibly such engagement may be the last thing wished for by his superiors. Short of this, however, he must fight as hard as possible. There will be no question of a reserve in this case, because the conditions relate only to the artillery commander of the protective troops. In reality the whole of the artillery except his own detached force is in reserve. With the guns he has available, it is his duty to make as big a fight as he can, and this may even necessitate a large expenditure of ammunition, which would be quite unjustifiable under other circumstances.

Should both superior commanders desire to bring about a general engagement, the fight between protective troops will soon develop in importance. In the case where both armies are making some strategic move, in order to seize the initiative, the result of the preliminary encounter will probably be decided by luck more than anything else, for at the moment the protective troops become engaged there will certainly be some feature, a river perhaps, or a ridge, or chain of woods, or village, which will naturally become the first objective of both sides, and the one first to seize it will temporarily act defensively in order to make secure the position captured as a point from which to make further advances later. More troops from the main body will hurry up to establish a superiority of force, and the other side will also so act in its efforts to regain or gain the position in dispute. Guns will probably be among the first of these reinforcements, and with them, as with those of the protective force, there will be little thought of keeping any in reserve. Then more infantry will arrive, but no commander will throw into action more troops than he feels are absolutely necessary, but will rather at once select places for his various columns to assume formations of assembly, covered by the troops already engaged.

If either side gains a decisive advantage the defeated troops will fall back upon their main forces, but even if neither side does so, some small initial advantage, ground, the idiosyncracies of commanders, or the strategic situation, will sooner or later combine to throw one of them on the defensive while the other will be left free to attack, and the fight will gradually assume the nature of a premeditated battle. During the hours spent by the troops in forming what may be called line of battle from line of columns marching alongside each other on various roads, reports will have gone back to headquarters, and some general plan will be formed by the army commander, who will issue operation orders. We will assume first that one division is directed to make a vigorous frontal attack, while another division is moved into a suitable position to make a

decisive flank attack, say on the right. We will consider first the former of these, the commander of which will now assign a definite objective to each of his brigades, possibly deploying two and keeping one in reserve. He will distinctly state the direction of the attack to be made by each of the said two brigades, and he will distribute his guns ready to come into action to support the infantry. "In the early stages, while the infantry are deploying and developing the attack, fire should not be opened with more guns than are necessary to accomplish the task in hand, the remainder being kept in positions of readiness."—(F. S. R., Pt. I, 105 (1).) This for two distinct reasons. Q.-F. guns can develop such a volume of fire that comparatively few should be able to do all that is needed and possible, considering ammunition supply, and those batteries kept in hand can completely retain their mobility. Probably the guns of the original advanced guard, and some or all of those hurried forward to reinforce them, may be enough for the purpose, but the commander, although never losing sight of his chief task at this stage—to assist the infantry to advance—must further never lose sight of what will be required of him when that stage is reached when the great struggle for superiority of fire begins. The "infantry do not want the artillery scheme of operation to be based on the initial stages of the attack, but to be based on that stage when the struggle occurs for fire superiority."—(Gen. Haking's Lecture, R. A. I., November 1908.) This then is the chief reason why some guns must be kept in reserve during the early stages of a battle. But at the same time those guns already brought into action may not be able to do all that is required of them, and this may especially be the case in an encounter battle. In a premeditated attack a commander will have in his mind from the very first a general plan of operations. He may have to vary it, and that will require time and special arrangements of a very difficult nature, but in his plans he will arrange his guns from the very first stage—the distant advance of his infantry—in such a way that, when the real heavy fighting for fire superiority begins, they will by that time be disposed to the best advantage. In an encounter battle this from the very nature of things is an impossibility. The guns of an advanced guard, and to a great extent the other guns hurried up to reinforce them, will occupy the best positions to be found for the pressing needs of the moment. It will be pure good luck if such positions are the best for the distant infantry advance, not to mention the fire fight later on. Therefore to cover the infantry advance special arrangements may have to be made. During this stage, the first of the engagement proper, leaving out the skirmishing and more or less rough and tumble fight between the protective troops, all the infantry can do is to go forward. It is no good their firing too, for the enemy is out of rifle range. Moreover, they must go straight forward, there is no elbow room for them to zigzag. Therefore some at any rate must be exposed if the ground is open, and they will then "be exposed to the enemy's artillery fire, and there is no earthly means of

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320	Persian and Turkey in Revolt ...	David Fraser	1911	1
321	The West in the East ...	Pryce Collier	1911	1
322	India under Curzon ...	Loyal Fraser	1911	1

### Section Q. Books of Reference.

60	German for Military Students ...	F. O. Zimmerman	1911	1
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### Section R. Sciences.

45	Multiplex Telephony and Tele- graphy by means of Electric Waves guided by Wires ...	G. O. Squires	1911	1
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### Section S. Strategy and Tactics.

121	Études sur la Guerre ...	Lt-Col. Montaigne	1911	1
46	Letters on Amphibious Wars	Brig-Genl G. G. Aston	1911	1
232	Influence of Mr. Chandler on British Cavalry ...	"Vindex"	1911	1
433	Fire Problems ...	Major-Genl D. D. Fisher	1911	1

### Section T. Military Training and Education.

34	Catechism on Field Engineering Manual	A. W. Sharpe	1911	1
108	Sketch map of Russo-Japanese War, with notes and references	Forster (see A. C.)	1911	1
100	Organization, Administration, and Equipment Made Easy ...	Lt-Col. Manning	1911	1
111	Sketch Company Drill Made Easy	"Adjutant"	1911	1
132	Extended Order Drill, and the Company in Battle	"Adjutant"	1911	1
10	Sketch Army Signaling	General P. E. Ken	1911	1
106	Sketch of Principles of Education in the Army	Major R. F. Rogers	1911	1
213	Sketch of Tactical Principles	Lt-Col. Nicholson	1911	1

# United Service Institution of India.

## GOLD MEDAL ESSAY COMPETITION.

The Council have chosen as the subject for the Gold Medal Essay for 1912-13 the following :—

“Examine the application of the main principles laid down in Field Service Regulations I, Chapter VII (The Battle) to the conditions of a campaign in a terrain similar to that of Baluchistan and Afghanistan, against an army organised on modern principles.”

The following are the conditions of the competition :—

- (1) The competition is open to all gazetted officers of the civil administration, the navy, army, or volunteers.
- (2) Essays must be printed or type-written and submitted in duplicate.
- (3) When a reference is made to any work, the title of such work is to be quoted.
- (4) Essays are to be *strictly anonymous*. Each must have a motto, and enclosed with the essay there should be sent a *sealed* envelope with the motto written on the outside and the name of the competitor inside.
- (5) Essays will not be accepted unless received by the Secretary on or before the 30th June 1913.
- (6) Essays will be submitted for adjudication to Referees chosen by the Council. No medal will be awarded if the Council consider that the best essay is not of a sufficient standard of excellence.
- (7) The name of the successful candidate will be announced at a Council Meeting to be held in August or September 1913.
- (8) All essays submitted are to become the property of the United Service Institution of India *absolutely*, and authors will not be at liberty to make any use whatsoever of their essays without the sanction of the Council.
- (9) Essays must not exceed 15 pages of the size and style of the Journal, exclusive of any appendices, tables, or maps.

By order of the Council,

SIMLA :  
1st July 1912. }

C. F. ASPINALL, CAPTAIN,

*Secretary, U. S. I.*



# THE STANDARD

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# UNITED SERVICE INSTITUTION OF INDIA

JANUARY, 1912.

## SECRETARY'S NOTES

### I. NEW MEMBERS.

The following Members have joined the Institution during the months September—December, 1911 :—

Lieut. E. G. Hume.	Maj. W. J. H. Hunter.
Capt. H. Medlicott.	Lieut. C. A. Raynor.
Maj. D. Sladen.	Maj. R. C. Harbottle.
Maj. A. E. Glasgow.	Capt. J. E. Colenso.
Maj. H. A. Carr.	Maj. L. J. Chapman.
Maj. J. W. Leather.	Capt. J. H. McCudden.
Maj. M. J. F. FitzGerald.	Lieut. E. L. G. Whitting.
Capt. A. S. Evans.	Capt. G. C. Clarke.
Maj. B. Holbrooke.	Maj. C. L. Perrin.
Lieut. J. Turner.	Maj. H. L. Anderson.
Capt. C. M. Wagstaff.	Maj. T. D. Bullen.
Lieut. M. E. Parnell.	Maj. R. Muter, R.E. (Life Member).
Maj. A. de C. Rennick.	Capt. A. D. Murray (Life Member).
Capt. L. E. Warren (Life Member).	Capt. E. B. Maunsell.
Maj. H. M. Souter.	

### II. GOLD MEDAL ESSAY COMPETITION, 1910-1911.

The subject of the Essay was :—

“ The Maintenance of Law and Order in India considered in relation to the mutual co-operation of the civil and military powers in the country.”

Fourteen Essays were submitted, and the Gold Medal was awarded to Mr. D. Petrie, M.A., Punjab Police.

Essays by the following five officers were specially commended, viz., Captain Mark Sygne, Captain S. de V. Julius, Captain E. R. Hayes-Sadler and Mr. H. C. Woodman, I.C.S.

The adjudicating officers were Lt.-Genl. Sir P. H. N. Lake, K.C.M.G., the Hon'ble Sir B. Robertson, K.C.I.E., I.C.S., Brig.-General A. Hamilton-Gordon, C.B., and Sir C. R. Cleveland, K.C.I.E., I.C.S.; and the Hon'ble Sir J. L. Jenkins, K.C.S.I., I.C.S., acted as referee.

To assist officers studying to take technical schemes are issued, by the Council of the Institution, to members only, on the following terms :—

Two sets of 5 series, 1 to 5 in each series, revised to 1911, are now available, and an entirely new series, Series VI, is in process of preparation, of which six problems are ready for issue.

#### IV. MILITARY HISTORY PAPERS.

(b) Two sets of six questions each on the strategy of the Russo-Japanese War.

A number of copies of the book, by 25 pagers, and the title must be sent under these names to the Secretary, United Service Institutions of India.

Because  $\alpha_{ij}$  is the sensitivity of  $\alpha_i$  to changes of rank and title, members are permitted to vary  $\alpha_{ij}$  to reflect their own change of opinion.

THE UNIVERSITY OF CHICAGO

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<sup>10</sup> For a general survey of the role of the military in the defense of the United States, see, for example, the report of the Joint Chiefs of Staff on the Department of Defense, "Part I: The Evolution of the National Military Defense of the United States."

Do not forget to check the weather forecast before you go.

The attention of contributors is drawn to the addition made to the conditions in the slip published with the July Journal. 9 Essays must not exceed 25 pages exclusive of tables of the size and style of the Journal.

[illegible]

# THE JOURNAL

OF THE

## United Service Institution of India.

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Vol. XLI.

January 1912.

No. 186.

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### THE GUNS OF A DIVISION IN ACTION.

BY LIEUT.-COLONEL E. NORRIS, R.F.A.

Twenty or thirty years ago it was held that reserve artillery was utterly out of place on a modern battlefield; every gun should be deployed for the artillery duel at the earliest opportunity. But it would seem that under the latest circumstances reserve artillery will reappear. Two great factors have combined to bring this about, the invention of a real Q.-F. gun, and the great increase in the number of guns as compared with rifles in all modern armies. There is however actually a great difference between the old "reserve artillery" and the modern "artillery reserve." The former is never likely to reappear in any army organization, the tendency being to associate guns more closely with rifles than ever, and artillery units outside the divisions are now generally only those specially equipped. But on the field of battle in the future there probably will be an artillery reserve, just as there always must be an infantry reserve, during the earliest phases of the fight.

The large increase of guns referred to above might alone have brought this about, but it is chiefly due to the immense improvement in firearms, the latest development of which is a real quick-firing gun. We now have weapons capable of firing away a vast amount of ammunition in a comparatively short space of time, and such weapons cannot at all times be used up to their full capacity, because it is quite impossible to bring ammunition into the field, not to mention the firing line, in quantities sufficient for such continuously rapid fire. As a result there must often be a large part of any force superfluous for the immediate purpose in view, especially in the earliest stages of any fight, and consequently some guns as well as rifles can and should be kept in reserve until the

later stages are reached, when every gun and every rifle that can be assembled at some particular place is wanted, and wanted to pour as many well directed projectiles as possible upon the enemy, in order to secure that "superiority of fire" which will turn the scale and bring victory within reach.

For this supreme struggle we must undoubtedly bring into action at the decisive point every weapon—guns and rifles in proper proportion—which we can possibly get there, but for other purposes—in preliminary skirmishes, in feints, along false fronts, and generally during the development of any action—we need only employ power in arms, both guns and rifles, men, and ammunition, sufficient for the immediate object, keeping all the rest in readiness, if necessary, to augment the troops engaged in any particular operation, but more especially in reserve for the great fire fight, as fresh, mobile and efficient as possible. The strength of any such reserve naturally varies greatly during the various stages of the fight, and must depend upon all kinds of conditions—topographic, climatic, psychologic, and so on.

Now whatever the conditions may be in any particular action, we can always trace five phases or stages in every case. Sometimes one or other may be protracted, or may fall and cause the recurrence of an earlier phase, or may be passed through very rapidly so as hardly to appear. They are these:—

- (i) the preliminary encounter between protective troops;
- (ii) the advance of the infantry of the main body till it reaches the limit of hostile rifle fire;
- (iii) the further advance to those positions where the building up of great firing lines is possible;
- (iv) the fight in those positions for superiority of fire over the enemy; and, finally,
- (v) the assault, or crisis.

Naturally these phases often overlap or merge one into another, but each has distinctive features of its own. There are, however, permanent conditions which exist in all of the five phases, and these it would be better to consider first. We are, of course, considering the question from the artillery point of view, and the dominant condition is the fundamental role of field artillery. It is an auxiliary arm, and its one task is to support the infantry. There may be moments when for good reasons the infantry must help the artillery, and guns may at times have to play a more prominent role than infantry, but their task is essentially to support their predominant and under fire, more nearly equal partner, and the greater the need the closer must be this supporting role.

The power to give this support is however limited by other circumstances which the gunner has constantly to bear in mind, and the first of these is mobility. Less than any other means of power to continue to support the infantry as the fight progresses, and as the latter advances, and that may mean the defeat of the infantry. Retention of infantry is therefore one great governing

factor which has to be constantly balanced against the necessity for supporting the infantry. In those phases of the battle when a subsequent advance will probably or possibly be required, retention of mobility must be ever present in the mind of an artillery commander, and frequently, when the dominant factor—support of the infantry—compels a certain amount of exposure and risk, it must cause him the gravest anxiety. But fortunately he will be able to do all that is required by using a small number of guns to their fullest capacity, thereby saving several other guns from such exposure and risk. Equal almost in importance with this retention of mobility comes the question of ammunition supply. We can indeed scarcely exaggerate the vast importance of economising ammunition, when it is borne in mind that modern guns can be fired at such a rate as would exhaust the whole of the ammunition taken into the field with an army, could such be brought alongside the guns, which in itself is another immense difficulty, in less than an hour, and that any one gun could use up the ammunition immediately available in the battery in a very few minutes. And, apart from the fact that the ammunition carried into the field is by no means enough for every possible contingency (*c.f.* Col. Roquerol's estimate) there is the other difficulty referred to above, namely, the actual supply of rounds to the guns in action, a difficulty which grows enormously if guns become exposed and lose their mobility.

We see then that the conditions which prevail throughout all phases of a fight, more or less according to circumstances, are these:—

- (1) The fundamental principle that guns must support the infantry at all times, and that the greater the need the closer must be the support.
- (2) To continue that support, retention of mobility is necessary especially in the earlier stages of a fight.
- (3) That while ammunition is limited in quantity the capacity of the gun for spending it is almost unlimited.
- (4) That when guns do, through misfortune or necessity, lose their mobility, actual ammunition supply becomes increasingly difficult.

But in consequence of the great capacity of the modern gun, far exceeding any reasonable demand (bearing 3 and 4 above in mind) which is likely to be made upon it during the earlier phases of a fight, a compensating condition may now be added; the reserve power inherent to each individual gun automatically creates a reserve of guns, which guns thus become available together with reserves of infantry for the great fire fight and the last crisis without incurring any unnecessary risks during the earlier phases.

Passing then to a more detailed consideration of our subject we come first of all to the engagement between the protective troops—whether such be advanced guards or outposts. If the respective forces are not quite small, there will probably be some guns on both sides, and their task will be to effect as much as possible with the

means at their disposal. There will be no question of reserving anything, each commander will act as vigorously as possible. The only limit to the enterprise of the artillery will be the necessity for retaining their mobility, for no artillery commander, whether general officer or section commander, should ever precipitate matters by the occupation of any position from which his guns cannot be withdrawn without a general engagement, when possibly such engagement may be the last thing wished for by his superiors. Short of this, however, he must fight as hard as possible. There will be no question of a reserve in this case, because the conditions relate only to the artillery commander of the protective troops. In reality the whole of the artillery except his own detached force is in reserve. With the guns he has available, it is his duty to make as big a fight as he can, and this may even necessitate a large expenditure of ammunition, which would be quite unjustifiable under other circumstances.

Should both superior commanders desire to bring about a general engagement, the fight between protective troops will soon develop in importance. In the case where both armies are making some strategic move, in order to seize the initiative, the result of the preliminary encounter will probably be decided by luck more than anything else, for at the moment the protective troops become engaged there will certainly be some feature, a river perhaps, or a ridge, or chain of woods, or village, which will naturally become the first objective of both sides, and the one first to seize it will temporarily act defensively in order to make secure the position captured as a point from which to make further advances later. More troops from the main body will hurry up to establish a superiority of force, and the other side will also so act in its efforts to regain or gain the position in dispute. Guns will probably be among the first of these reinforcements, and with them, as with those of the protective force, there will be little thought of keeping any in reserve. Then more infantry will arrive, but no commander will throw into action more troops than he feels are absolutely necessary, but will rather at once select places for his various columns to assume formations of assembly, covered by the troops already engaged.

If either side gains a decisive advantage the defeated troops will fall back upon their main forces, but even if neither side does so, some small initial advantage, ground, the idiosyncracies of commanders, or the strategic situation, will sooner or later combine to throw one of them on the defensive while the other will be left free to attack, and the fight will gradually assume the nature of a pre-meditated battle. During the hours spent by the troops in forming what may be called line of battle from line of columns marching alongside each other on various roads, reports will have gone back to headquarters, and some general plan will be formed by the army commander, who will issue operation orders. We will assume first that one division is directed to make a vigorous frontal attack, while another division is moved into a suitable position to make a

decisive flank attack, say on the right. We will consider first the former of these, the commander of which will now assign a definite objective to each of his brigades, possibly deploying two and keeping one in reserve. He will distinctly state the direction of the attack to be made by each of the said two brigades, and he will distribute his guns ready to come into action to support the infantry. "In the early stages, while the infantry are deploying and developing the attack, fire should not be opened with more guns than are necessary to accomplish the task in hand, the remainder being kept in positions of readiness."—(F. S. R., Pt. I, 105 (1) ) This for two distinct reasons. Q.-F. guns can develop such a volume of fire that comparatively few should be able to do all that is needed and possible, considering ammunition supply, and those batteries kept in hand can completely retain their mobility. Probably the guns of the original advanced guard, and some or all of those hurried forward to reinforce them, may be enough for the purpose, but the commander, although never losing sight of his chief task at this stage—to assist the infantry to advance—must further never lose sight of what will be required of him when that stage is reached when the great struggle for superiority of fire begins. The "infantry do not want the artillery scheme of operation to be based on the initial stages of the attack, but to be based on that stage when the struggle occurs for fire superiority."—(Gen. Haking's Lecture, R. A. I., November 1908.) This then is the chief reason why some guns must be kept in reserve during the early stages of a battle. But at the same time those guns already brought into action may not be able to do all that is required of them, and this may especially be the case in an encounter battle. In a premeditated attack a commander will have in his mind from the very first a general plan of operations. He may have to vary it, and that will require time and special arrangements of a very difficult nature, but in his plans he will arrange his guns from the very first stage—the distant advance of his infantry—in such a way that, when the real heavy fighting for fire superiority begins, they will by that time be disposed to the best advantage. In an encounter battle this from the very nature of things is an impossibility. The guns of an advanced guard, and to a great extent the other guns hurried up to reinforce them, will occupy the best positions to be found for the pressing needs of the moment. It will be pure good luck if such positions are the best for the distant infantry advance, not to mention the fire fight later on. Therefore to cover the infantry advance special arrangements may have to be made. During this stage, the first of the engagement proper, leaving out the skirmishing and more or less rough and tumble fight between the protective troops, all the infantry can do is to go forward. It is no good their firing too, for the enemy is out of rifle range. Moreover, they must go straight forward, there is no elbow room for them to zigzag. Therefore some at any rate must be exposed if the ground is open, and they will then "be exposed to the enemy's artillery fire, and there is no earthly means of



later stages are reached, when every gun and every rifle that can be assembled at some particular place is wanted, and wanted to pour as many well directed projectiles as possible upon the enemy, in order to secure that "superiority of fire" which will turn the scale and bring victory within reach.

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Naturally these phases often overlap or merge one into another, but each has distinctive features of its own. There are however permanent conditions which exist in all of the five phases, and these it would be better to consider first. We are of course considering the question from the artillery point of view, and the dominant condition is the fundamental role of field artillery. It is an auxiliary arm and its one task is to support the infantry. There may be moments when for a few seconds the infantry must help the artillery, and guns may at times have to play a more prominent role than infantry, but their task is essentially to support their predominant and under fire main combat partner, and the greater the need the closer must be the support given.

The power to give this support is however limited by other circumstances, which the gun must be constantly prepared to bear in mind, and the first of these is mobility. Less than any other means of power to continue to support the infantry as the latter progresses and as the latter advances, and that may mean the defeat of the infantry. Retention of mobility is therefore one great governing

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getting out of it, and the infantry then want the artillery during that period either to keep down the enemy's artillery fire, or to divert it to themselves."—(Gen. Haking's Lecture.) Now it may happen that there are parts of the enemy's position not commanded by any guns already in action, and if so the commander must discover places for more of his guns to open fire from. Such guns may very well be heavies or howitzers, as probably only 18-pounders are already engaged, but he must still remember the eventual struggle for fire superiority, and reserve as many guns as possible for that. At the same time when ordering this second reinforcement of guns into action, especially the heavies, he will be in possession of the plan sketched in divisional operation orders, and so may be able to base his scheme of operations on the fire fight, although satisfying another and for the moment more pressing requirement.

The next stage of the fight is when the infantry begin to come under infantry fire, and are therefore themselves able to reply. From the point of view of the artillery already in action there is not much difference from the previous stage: they still have to assist the infantry to advance. Their targets may change and will increase in number, for they must always engage those troops which are the most serious obstacle to their own infantry, but their *raison d'être* in action remains much the same. As however this new stage progresses, some infantry will gradually, first here and then there, reach those positions from which they cannot advance without being killed, and as they get nearer and nearer to those positions they will require closer and closer artillery support, and those batteries which have during the earlier stages of the fight been kept in reserve will have to be pushed into the fight, care being taken to keep those of the same brigade together whenever possible, as the mixing of units invariably leads to more or less confusion or at least difficulty in control, and ammunition supply and higher control must be retained as long as possible in all cases, and at no time with greater effort than during this process of building up the great firing line.

In the last phases of all, a "portion of the artillery must be pushed forward to within close artillery ranges, so as to be able to deal with possible counter attacks, and to give infantry immediate assistance, when the fluctuations of the fight make this necessary."—(F. S. R.) The infantry want the closest support possible. To push some guns forward in this way may require the help of the infantry themselves. Just as they want our help gradually to build up their firing line in good fire positions, so we may want theirs to get into positions from which we can help them in the assault. The fact that our gun is a Q-F. gun will again help to meet the difficulty. Even if only a few guns get forward, some being knocked out by casualties on the way, these can, by increasing their rate of fire, probably do all that more guns could do to help on the action. The modern shielded gun once in action is very hard to knock out. Far more serious than the temporary disablement of some guns during their final advance, and a situation requiring the greatest caution,

bravery, and arrangement to avoid, is the possibility of running out of ammunition. This may well be the greatest argument against open positions, for, although three or four guns of a battery may succeed in dashing into action in such a position, it will be increasingly difficult to keep up a supply of ammunition. In a more or less screened position the difficulty will not be nearly so great. Anyhow we have to take these risks, and our equipment and also the number of guns we have to begin with should enable us to calculate for certain on being able to place some guns at the elbow of our infantry, though, as has been said, we may have to ask the infantry themselves to help us to do so, during the final development of the firing line, while superiority of fire is being gained, and during the assault.

How is all this to be done? We have seen that in the preliminary encounters between protective troops, even after some reinforcements have been pushed into the fight to secure an early success, only comparatively few batteries will have been employed, but possibly they may have used comparatively a large proportion of ammunition. Here and there, too, some batteries may have been severely handled and for the time put out of action. Then again we have seen the main columns of infantry assembled, allotted to various tasks, and (less some held in reserve) sent forward to the attack. During this last operation we have seen the artillery commander fill up any gaps that may have been left during the preliminary phase with more fresh batteries, perhaps howitzers or heavy batteries, so that no portion of the enemy's position may be neglected, and no body of infantry left unsupported during its advance. Gradually the infantry has come within rifle range of the enemy and been able to assist in covering its own advance by some rifle fire, and here and there some units have reached their final fire positions "from which to advance means certain death unless a superiority of fire over the enemy shall have been gained." So far it has been plain sailing, and British troops have time after time practised the various operations in all sorts of circumstances, but now we must study the task which we as gunners shall have to perform from this phase onward till victory is gained, and see in what ways we can use our guns to the best advantage.

We have seen already that the C. R. A. must base all his plans for utilising his guns on the ultimate situation which will arise during the fire fight. He must in fact solve a problem somewhat such as this. The enemy occupy a certain position. Our infantry fire positions will eventually be on such and such a line. Where are positions from which I can pour continuously a heavy shell fire upon the enemy, and especially his guns if they harass our infantry, and on the point where our attack is going to be pushed in? And secondly what batteries shall I send respectively to these positions? This problem he must solve as early as possible in the fight, so that all reinforcements deployed to assist the infantry to advance may be as far as possible placed where they will ultimately be required, but it is doubtful whether he can reach a satisfactory solution before the

third phase is entered upon, when the infantry will be striving to establish their fire positions. He will then find himself in some such position as this, that some batteries are in action in positions from which they cannot withdraw, some in others where they have successfully retained their mobility, and still a few perhaps in reserve.

In the Grand French Manœuvres in 1908 an experiment was tried to squeeze every battery (23 four-gun batteries) of an army corps into a front of three miles to support an attack on that front. The ground was favourable, but in spite of a careful allotment of zones, gun intervals were often reduced to 13 yards, two batteries had to remain limbered up because they could not get into their intended positions, and at the beginning of the fight three other batteries could find no other position than one from which it was impossible for them to fire, so that only 18 batteries with 72 guns could deploy on a front of three miles. Later when the front measured five miles the remaining guns came into action. Now at home there are 70 guns in every division, and 5,000 yards is a very broad front for that force, as it only allows 2·4 rifles per yard, so we are very well able to agree with the French opinion that the modern increase of artillery entails a reconstitution of reserve artillery and that the task of the artillery commander is much lightened by this fact, for, as the fight develops and batteries are successively ordered to reinforce the fighting troops, he can continue to draw on his reserve instead of having to move up batteries already in action to engage fresh targets. This circumstance then, combined with the fact that Q.-F. guns can develop a far higher rate of fire than is likely to be wanted in the earlier phases of the fight, except on rare occasions, is the chief means available to enable an artillery commander to develop his plan of operations, which he must form in order to co-operate with and fully support the infantry as they develop their great line of fire positions.

But it is unfortunate that opportunities for solving such problems rarely occur at peace manœuvres or during divisional training, the reason probably being that it is impossible to reproduce the last phases of a battle with any reality without bullets, and in consequence there is a feeling that no good would come of such operations. What generally happens at field days is that the infantry having deployed all their reserves in the firing line, an order is passed to the artillery closely to support their assault. In other words we jump from the second stage of the advance of the infantry into action to the final assault, frequently an utterly impossible one, omitting the great fire fight altogether; or perhaps the "cease fire" sounds. Now from the artillery point of view this is particularly unfortunate, because we jump from that stage when probably a large proportion of the guns would still be in reserve to that when every gun should be firing for all it is worth to help the infantry in their final struggle for victory. The result is a sham-fight—the old-fashioned name describes it better than "field day"—

and every gun is pushed forward, perhaps at random, in order to be in action when the assault is made. In reality this pushing forward all the reserve guns will have to be a most carefully worked out operation, based on the requirements of the great struggle for fire superiority, probably requiring the co-operation and certainly the sympathy and patience of the infantry to carry out, and perhaps the sheltering darkness of night.

The plan of his chief and the movements of the various bodies of infantry as they advance must be clearly understood by every C. R. A. in order that he may do this in the best way possible. It may be he will have to detach batteries to co-operate directly with certain infantry units. Other batteries may have to be detailed to crush hostile guns, and even until the final stage he may be able continuously to recreate a reserve from those batteries first sent into action, which having fulfilled the task originally set them, may have become silent. Perhaps too it will even be possible to refit batteries previously put out of action. It is also probable that if a division is acting on a narrow front some batteries may still to the very last be in reserve. But guns in reserve must be prepared at any moment to join in the fight. Officers must go forward to study the situation, select positions and routes under cover of the advancing infantry, and make every kind of preparation, while men and horses are feeding and resting, ammunition if necessary is being replaced, casualties are being made good, and so on. It should always be presumed by every artillery officer that his guns will sooner or later be required, for "in selecting the objective of the decisive attack a commander must consider whether he can develop the full power of his artillery against it"—(F. S. R. I., 106 (3)), and every attack may be a decisive one, if "opportunities for closing with the enemy arise"; so if this rule has been observed an opportunity will come. All this must take time, and it is a thousand pities that so few opportunities occur for practising this all important phase of a battle. The French experiment described above was of course not conclusive, but it certainly confirms the view held by many authorities that with the large number of guns now allotted to an army, occasions may arise when all cannot be deployed, simply because in most countries there will not be sufficient room.

In a flank division, and especially if it is carrying out a turning movement, there will be much more elbow room for guns, but suitable escorts will be necessary on an exposed flank.

If superiority of fire is gained, the last phase will quickly come, and if the enemy is driven from his positions, a pursuit will follow, and those batteries which have retained their mobility will boldly push to the front to assist in the utter defeat of the enemy. If, on the other hand, a counter-attack is delivered these batteries must act boldly to save their friends, and should victory at the last moment be snatched away from us the guns must form points upon which our baffled troops can rally. At the last no gun should ever be idle.



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But it is unfortunate that opportunities for solving such problems rarely occur at present manœuvres or during tactical training, the reason probably being that it is impossible to reproduce the last phases of a battle very accurately with the troops, and in consequence there is a feeling that no good will be done of such operations. What general conclusion of this kind is, that the infantry having developed its own reserves in the fighting line, an order is possible which will involve a sacrifice of the reserve. In other words, we are potentially at the disadvantage of the advance of the infantry into contact with the enemy, as compared with an artillery position enabling the great fire to be brought to bear perhaps the decisive fire is missed. Now from the artillery point of view this is particularly unfortunate because we are pinned in that stage when probably a large proportion of the guns will be destroyed or so close to that when they are so close to the enemy it is so hard to help the infantry in their final struggle with the enemy. This is a shameful fact—the fact is, however, it is not at all that way, and day —

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Having considered how reserve artillery may be employed in the attack we now turn to a consideration of ways in which it can be employed in defence. There are, be it remembered, two distinct kinds of defence. First that adopted in rear guard actions and delaying tactics, and second, that employed in offensive defence, where one part of a force holds on to some position in order to enable another to make an effective attack.

In the former of the two a large number of guns will be employed, and all will strive to retain their mobility with the greatest care. The Q. F. gun assists the commander tremendously in this kind of fighting, because some batteries can employ a rapid rate of fire while others are retiring to occupy another position; and again, if some guns must be left to hold some point to the last where they may be lost, a minimum number can be detached, being provided with ample ammunition. A gun here and a gun there posted in comparative security, immobile perhaps, but shielded and entrenched, could hold out for a very long time, and perhaps cover the retirement of hundreds of infantrymen.

In offensive defence similar use might be made of single guns and sections. They would be pushed well forward, carefully entrenched and screened, with ample ammunition and some spare numbers, waiting for opportunities to surprise by their fire in later stages of the attack the enemy's troops as they advance, or so as to command some particular line of approach, or some defile or likely artillery position. But the main line of artillery defence would be under cover, and also a proper proportion of guns would actually accompany the troops detailed to strike the offensive blow, whether such were a counter attack pure and simple, or a prearranged movement against the enemy during his advance to attack us.

The conduct of artillery in a great counter attack is similar to that in ordinary attack, but risks must be more freely taken. To succeed, a counter attack must be a surprise or come with such moral or physical weight that the enemy is overwhelmed by its violence. The infantry must press as it were into the fire fight at once, and using the moral effect of their sudden attack, will perhaps be able to press the superiority of fire, and assault at once. Guns must co-operate in the same spirit, and with great boldness. If guns are lost it will be in noble combat and with honour. Equipment, men, horses, and ammunition must be expended freely if necessary. A counter attack is in its very essence a lottery. If the commander-in-chief has successfully secured the majority of chances in his own favour, it ought to win, and has the best chance of winning by an almost reckless dash in which there should be no reserve. There must be some losses, but if victory is gained, the attack has been justified.

So far the subject has been treated from what may be called the European point of view, as part of modern regular warfare. Here in India there are special circumstances which must be taken into consideration. In the first place the organization of divisions

is different ; there are only about 36 guns available as against 72 in a British division. In the second place our most probable enemies will not be organized on exactly the lines of a European power. But the principles will be the same. Take a division which includes a brigade of 18-pr. guns, two mountain batteries and a heavy battery. Probably one mountain battery would be with the advanced guard, and at least one 18-pr. battery near the head of the main body on the march. Or an alternative which suggests itself as worth careful consideration is to detach a section from each battery of the 18-pr. brigade instead of one battery. These three sections would be the first reserve called on to support the protective troops, and still a complete brigade of three four-gun batteries would be available for the main action. Probably when the plan of operation is worked out, these batteries would rejoin and absorb their own detached sections, or later the detached sections having fulfilled their first rôle would rejoin their batteries. The heavy battery and second mountain battery would be used for special purposes for which their equipment particularly fits them.

These subsidiary problems require the clearest consideration by all infantry brigadiers in India. They are essentially the executive staff of an army in the field, the divisional staffs directing the whole, in accordance with the plan of operations devised by the army staff. And as the infantry want the artillery to act, so must the artillery act. Infantry must advance and guns must help them to do so. It is absolutely necessary for artillery officers to understand infantry tactics, and for infantry officers, especially brigadiers and battalion commanders, to know what guns can and cannot do. They should feel perfect confidence that every gunner knows his job is to help the infantry, but at the same time they should appreciate the difficulties which constantly limit the gunner's power of so helping, namely, loss of mobility, and ammunition supply. Infantry, too, of all ranks should remember that sometimes they must help guns to get into suitable positions to support their own (the infantry's) subsequent advance, that there is such a thing as infantry co-operating with guns, as well as the normal state of affairs when the guns help infantry.

The gradual employment of guns in an action, whereby a reserve is kept in hand as long as possible, must in this country depend more on the great capacity of the individual gun, for their number is in a modern sense still small, and probably will never exceed 48 per division. Therefore personnel must be both highly trained, and in proportion to the number of guns more numerous, and ammunition supply if possible must be more carefully studied in India than at Home. With actual columns in being this last problem should be well understood.



## REGIMENTAL EFFICIENCY.

BY LIEUT.-COL. W. C. WALTON, 104TH RIFLES.

How often may be heard such opinions as the following, expressed in various ways :—

"The utility of peace manœuvres is vitiated by the sense of unreality caused by the absence of bullets," or "What is the use of teaching our soldiers to shoot straight when they forget all they have been taught as soon as the enemy's bullets are flying : indifferent shots can plaster a hillside with bullets as efficiently as can marksmen "

The writer cannot subscribe to such opinions. There will doubtless be occasions when, in moments of excitement or carelessness, good soldiers will omit to put into practice what they have been taught during peace training, just as good golfers will at times "press," "slice," or "pull " and even omit to "keep their 'ee on the ball," though they know well that such mistakes lead to trouble. Nevertheless we also know that men who have been trained to pick up their cartridge cases after firing in peace manœuvres often maintain that habit in war, though they know that it is unnecessary in the latter case. Great is the force of habit, and the officer, who has trained his men with intelligence so as to habituate them to act soundly under peace conditions, feels a just confidence in leading those men into action, the successful result of which is the highest reward that any officer can ever hope to gain.

But this reward can hardly be anticipated by one who has omitted to give due consideration to, and instruction in, all the many branches of training which must go to produce reliable soldiers. An officer who has devoted himself disproportionately to rifle shooting will have small grounds for satisfaction on service should he discover that although his men can shoot very straight when they have an enemy to shoot at, they cannot, for instance, get to the fire position in good time owing to want of powers of physical endurance, or have no desire to close with the enemy owing to want of confidence in their bayonet. They may even be stopped by an obstacle they ought to be able to surmount, or be slow in obedience of orders owing to want of drill. Perhaps they may be unable to judge distance, or cannot entrench rapidly. What will be his feelings when he cannot obtain information, or pass orders, owing to deficient signalling practice and scouting ; or when he finds his patrols captured or shot, his advanced guard blundering into disaster, or his outposts rushed ?

It will hardly be denied that ignorance of any one of the matters mentioned above may stultify a knowledge of all the others, and most officers of experience will probably admit that it is extremely

difficult to select any one branch of training with a certainty that that is the most important, and may be practised at the expense of the rest. There is, however, one branch of training which has been selected for reward, and only one.

We are not told that this selection was made because that branch is of greater importance than any other. Such an inference seems a logical one, but it also seems possible that the absence of any practical proposal for instituting a system of reward for general proficiency, as against proficiency in musketry alone, may account for the selection of this one branch.

This article is written in the hope that it is only the absence of such a proposal that stands in the way of its adoption, and in the belief that such a proposal is not only possible but desirable.

Many useful suggestions can be made by regimental officers, and if this article gives rise to an expression of their views, it will not have been written in vain.

One axiom must, of course, be observed in all discussions of this nature, namely, that no further expenditure must be proposed. The reward for general proficiency must not be in excess of, or other than, the sum now allotted for musketry prizes. The idea that the money might be found regimentally will not be discussed here.

Nor is it proposed that there should be any interference with the prizes allotted for inter-regimental competitions, such as those given at divisional assaults-at-arms and rifle meetings. These inter-regimental contests have their own uses, but the results obtained from them are quite different in character from those obtained from regimental competitions. The latter should tend to produce all-round proficiency in the regiment, whereas the former give rise to the extra proficiency of a few men in each regiment, resulting in the exhibition of a high standard and the setting of a high ideal.

The proposition is that the prizes for the annual musketry course should be set free for distribution for the promotion of general efficiency.

The annual musketry course should be carried out as usual. Only after experiment can it be proved that the musketry would suffer from this arrangement. Having thus cleared the ground, let us proceed to discuss the details of a prize scheme best calculated to produce regimental efficiency.

It would be difficult to contrive a scheme in which prizes can be given for individual merit, more over the efficiency of the whole rather than of a few individuals is the object in view. Therefore it is proposed that a company, or better still, a double company should be the prize unit.

Thus we arrive at a championship double company scheme. Each man in the winning unit should receive a proportion of the prize money.

Such a competition has the additional advantage of inducing every man to play the game for the honour of the unit to which he belongs and is a fine incentive to all ranks to do their best.

in all branches of training. Exceptions can be made in the case of men who have spent their time in hospital owing to preventable disease, or in prison owing to misconduct, and so on.

There will certainly not be time for every man to take part in each competition, but this difficulty can be overcome by a nice mixture of selection and drawing lots. By this means every man will receive some training in most subjects, though he may not actually take part in the competition. The best time to hold the competitions will be during the drill season, when everyone is present, particularly towards the end of the drill season.

In the case of detachments there may be a difficulty, but this should not be insuperable, and schemes can be modified accordingly so long as the main object is kept in view.

The following is a detailed scheme for double company championship which has been practised with slight alterations for two years and found to work well, though it is doubtless capable of improvement.

The winning double company in each event is marked 1; the second 2; the third 3; and the fourth 4. The double company with the lowest total wins the championship.

The judging committee is formed of the C. O., the adjutant, and the quartermaster, since they are not specially interested in any particular double company. This does not preclude other officers from being called in to assist where necessary, as for instance in laying out courses, or in judging bayonet combats.

One last word before introducing a list of events showing how teams may be chosen to meet the object in view:—

Let those officers who consider themselves overworked read no more: this proposal will not agree with them. On the other hand, let all who think that there are at present too many British officers in Indian regiments consider this scheme well: there is work here to keep all the British officers fully employed. This appeal is not to those who feel "all of a tremble" when confronted by the prospect of hard work. But those who honestly believe that there is not work to keep fifteen officers fully employed in an Indian regiment during the drill season may be glad of the suggestions made here. A sphere of action for all is indicated, which need in no way interfere with the initiative of Indian officers.

To begin with, a few "general rules" will be found necessary, as, for instance, that lance-naiks will count as privates for purposes of the championship competitions. Also that, after a competition has begun no unauthorised communication may be held by any team with any one. The suggested list of events is as follows:—

1. *Tug of war*.—Ten of any Indian rank per double company.
2. *Bayonet fighting*.—Teams of 20 men to be selected as follows:—15 men to be selected by the D. C. C. from one half company in each double company; these half companies to be drawn by lot a few days before the event. The N.-C. O. and remaining 5 men to be selected by the D. C. C. from the D. C.



third phase is entered upon, when the infantry will be striving to establish their fire positions. He will then find himself in some such position as this, that some batteries are in action in positions from which they cannot withdraw, some in others where they have successfully retained their mobility, and still a few perhaps in reserve.

In the Grand French Manœuvres in 1908 an experiment was tried to squeeze every battery (23 four-gun batteries) of an army corps into a front of three miles to support an attack on that front. The ground was favourable, but in spite of a careful allotment of zones, gun intervals were often reduced to 13 yards, two batteries had to remain limbered up because they could not get into their intended positions, and at the beginning of the fight three other batteries could find no other position than one from which it was impossible for them to fire so that only 18 batteries with 72 guns could deploy on a front of three miles. Later when the front measured five miles the remaining guns came into action. Now at home there are 70 guns in every division, and 5,000 yards is a very broad front for that force, as it only allows 24 rifles per yard, so we are very well able to agree with the French opinion that the modern increase of artillery entails a re-constitution of reserve artillery and that the task of the artillery commander is much lightened by this fact, for, as the fight develops and batteries are successively ordered to reinforce the fighting troops, he can continue to draw on his reserve instead of having to move up batteries already in action to engage fresh targets. This circumstance, then, combined with the fact that Q. F. guns can develop a far higher rate of fire than is likely to be wanted in the earlier phases of the fight, except on rare occasions, is the chief means available to enable an artillery commander to develop his plan of operations, which he must form in order to co-operate with and fully support the infantry as they develop their great area of fire positions.

But it is not enough that opportunities for solving such problems arise out of the present methods of doing divisional training, the reason probably being that it is impossible to reproduce the last phases of a battle with any reality without the aid, and in consequence there is a feeling that no good will come of such operations. What general conditions of the field does it state that the infantry having deployed has no reserves in the fighting line, an order is possible, but a very difficult one to put into effect. In other words we are up to the knees in the age of the advance of the infantry into action, the batteries are not properly an artillery independent, so that the general situation is a very poor one, perhaps the poorest fire situation. Next to the artillery viewpoint this is perhaps a very unfortunate circumstance, because we are up to that stage when probably a large proportion of the guns will have been reserved to that which every general fighting force wishes to have to help the infantry in their tactical struggle, if necessary. The result is a shambled fight—the old-fashioned method is superior to that of today.—

and every gun is pushed forward, perhaps at random, in order to be in action when the assault is made. In reality this pushing forward all the reserve guns will have to be a most carefully worked out operation, based on the requirements of the great struggle for fire superiority, probably requiring the co-operation and certainly the sympathy and patience of the infantry to carry out, and perhaps the sheltering darkness of night.

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third phase is entered upon, when the infantry will be striving to establish their fire positions. He will then find himself in some such position as this, that some batteries are in action in positions from which they cannot withdraw, some in others where they have successfully retained their mobility, and still a few perhaps in reserve.

In the Grand French Manœuvres in 1908 an experiment was tried to squeeze every battery (23 four-gun batteries) of an army corps into a front of three miles to support an attack on that front. The ground was favourable, but in spite of a careful allotment of zones, gun intervals were often reduced to 13 yards, two batteries had to remain lumbered up because they could not get into their intended positions, and at the beginning of the fight three other batteries could find no other position than one from which it was impossible for them to fire so that only 18 batteries with 72 guns could deploy on a front of three miles. Later when the front measured five miles the remaining guns came into action. Now at home there are 70 guns in every division, and 5,000 yards is a very broad front for that force, as it only allows 24 rifles per yard so we are very well able to agree with the French opinion that the modern increase of artillery entails a reconstitution of reserve artillery and that the task of the artillery commander is much lightened by this fact. For, as the fight develops and batteries are successively ordered to reinforce the fighting troops, he can continue to draw on his reserve instead of having to move up batteries already in action to engage fresh targets. This circumstance, then, combined with the fact that Q. F. guns can develop a far higher rate of fire than is likely to be wanted in the earlier phases of the fight, except on rare occasions, is the chief means available to enable an artillery commander to discharge his portion of operations which he must form in order to cooperate with and fully support the infantry as they develop the right course of the position.

But it is unfortunate that opportunities for solving such problems rarely occur at present in exercises or during tactical training, the reason probably being that it is impossible to reproduce the last phases of a battle with any accuracy with all its details and in consequence there is a feeling that no good would come of such operations. What general considerations at the moment is that the infantry, having developed a position, reserves in the background, an order is passed that the artillery is to support the tactical assault. In other words we are told to take advantage of the advance of the infantry into a position that we as artillery can take advantage of, and so, in using the great truth that the longer the range the less accurate the fire is, it is. Now from a purely tactical point of view this is patently a mistake, for, as we have seen, at that stage when probably a large proportion of the guns will be in the reserves, so that when the attacking guns are ordered to advance it is worth to help the infantry in their tactical struggle with the enemy. The result is a shaming fight—the old test and French test is not so different from the old day —

and every gun is pushed forward, perhaps at random, in order to be in action when the assault is made. In reality this pushing forward all the reserve guns will have to be a most carefully worked out operation, based on the requirements of the great struggle for fire superiority, probably requiring the co-operation and certainly the sympathy and patience of the infantry to carry out, and perhaps the sheltering darkness of night.

The plan of his chief and the movements of the various bodies of infantry as they advance must be clearly understood by every C. R. A. in order that he may do this in the best way possible. It may be he will have to detach batteries to co-operate directly with certain infantry units. Other batteries may have to be detailed to crush hostile guns, and even until the final stage he may be able continuously to recreate a reserve from those batteries first sent into action, which having fulfilled the task originally set them, may have become silent. Perhaps too it will even be possible to refit batteries previously put out of action. It is also probable that if a division is acting on a narrow front some batteries may still to the very last be in reserve. But guns in reserve must be prepared at any moment to join in the fight. Officers must go forward to study the situation, select positions and routes under cover of the advancing infantry, and make every kind of preparation, while men and horses are feeding and resting, ammunition if necessary is being replaced, casualties are being made good, and so on. It should always be presumed by every artillery officer that his guns will sooner or later be required, for "in selecting the objective of the decisive attack a commander must consider whether he can develop the full power of his artillery against it"—(F. S. R. I., 106 (3)), and every attack may be a decisive one, if "opportunities for closing with the enemy arise"; so if this rule has been observed an opportunity will come. All this must take time, and it is a thousand pities that so few opportunities occur for practising this all important phase of a battle. The French experiment described above was of course not conclusive, but it certainly confirms the view held by many authorities that with the large number of guns now allotted to an army, occasions may arise when ail cannot be deployed, simply because in most countries there will not be sufficient room.

In a flank division, and especially if it is carrying out a turning movement, there will be much more elbow room for guns, but suitable escorts will be necessary on an exposed flank.

If superiority of fire is gained, the last phase will quickly come, and if the enemy is driven from his positions, a pursuit will follow, and those batteries which have retained their mobility will boldly push to the front to assist in the utter defeat of the enemy. If, on the other hand, a counter-attack is delivered these batteries must act boldly to save their friends, and should victory at the last moment be snatched away from us the guns must form points upon which our baffled troops can rally. At the last no gun should ever be idle.

Having considered how reserve artillery may be employed in the attack we now turn to a consideration of ways in which it can be employed in defence. There are, be it remembered, two distinct kinds of defence. First, that adopted in rear guard actions and delaying tactics, and second, that employed in offensive defence, where one part of a force holds on to some position in order to enable another to make an effective attack.

In the former of the two a large number of guns will be employed, and all will strive to retain their mobility with the greatest care. The Q.-F. gun assists the commander tremendously in this kind of fighting, because some batteries can employ a rapid rate of fire while others are retiring to occupy another position; and again, if some guns must be left to hold some point to the last where they may be lost, a minimum number can be detached, being provided with ample ammunition. A gun here and a gun there posted in comparative security, immobile perhaps, but shielded and entrenched, could hold out for a very long time, and perhaps cover the retirement of hundreds of infantrymen.

In offensive defence similar use might be made of single guns and sections. They would be pushed well forward, carefully entrenched and screened, with ample ammunition and some spare numbers, waiting for opportunities to surprise by their fire in later stages of the attack the enemy's troops as they advance, or so as to command some particular line of approach, or some defile, or likely artillery position. But the main line of artillery defence would be under cover, and also a proper proportion of guns would actually accompany the troops detailed to strike the offensive blow, whether such were a counter attack pure and simple, or a prearranged movement against the enemy during his advance to attack us.

The conduct of artillery in a great counter attack is similar to that in ordinary attack, but risks must be more freely taken. To succeed, a counter attack must be a surprise or come with such moral or physical weight that the enemy is overwhelmed by its violence. The infantry must jump as it were into the fire fight at once, and, using the moral effect of their sudden attack, will perhaps be able to presume superiority of fire, and assault at once. Guns must co-operate in the same spirit, and with great boldness. If guns are lost it will be in noble endeavour and with honour. Equipment, men, horses, and ammunition must be expended freely if necessary. A counter attack is in its very essence a lottery. If the commander-in-chief has successfully secured the majority of chances in his own favour, it ought to win, and has the best chance of winning by an almost reckless dash, in which there should be no reserve. There must be serious losses, but if victory is gained, the attack has been justified.

So far the subject has been treated from what may be called the European point of view, as part of modern regular warfare. Here in India there are special circumstances which must be taken into consideration. In the first place the organization of divisions

is different; there are only about 36 guns available as against 72 in a British division. In the second place our most probable enemies will not be organized on exactly the lines of a European power. But the principles will be the same. Take a division which includes a brigade of 18-pr. guns, two mountain batteries and a heavy battery. Probably one mountain battery would be with the advanced guard, and at least one 18-pr. battery near the head of the main body on the march. Or an alternative which suggests itself as worth careful consideration is to detach a section from each battery of the 18-pr. brigade instead of one battery. These three sections would be the first reserve called on to support the protective troops, and still a complete brigade of three four-gun batteries would be available for the main action. Probably when the plan of operation is worked out, these batteries would rejoin and absorb their own detached sections, or later the detached sections having fulfilled their first rôle would rejoin their batteries. The heavy battery and second mountain battery would be used for special purposes for which their equipment particularly fits them.

These subsidiary problems require the clearest consideration by all infantry brigadiers in India. They are essentially the executive staff of an army in the field, the divisional staffs directing the whole, in accordance with the plan of operations devised by the army staff. And as the infantry want the artillery to act, so must the artillery act. Infantry must advance and guns must help them to do so. It is absolutely necessary for artillery officers to understand infantry tactics, and for infantry officers, especially brigadiers and battalion commanders, to know what guns can and cannot do. They should feel perfect confidence that every gunner knows his job is to help the infantry, but at the same time they should appreciate the difficulties which constantly limit the gunner's power of so helping, namely, loss of mobility, and ammunition supply. Infantry, too, of all ranks should remember that sometimes they must help guns to get into suitable positions to support their own (the infantry's) subsequent advance, that there is such a thing as infantry co-operating with guns, as well as the normal state of affairs when the guns help infantry.

The gradual employment of guns in an action, whereby a reserve is kept in hand as long as possible, must in this country depend more on the great capacity of the individual gun, for their number is in a modern sense still small, and probably will never exceed 48 per division. Therefore personnel must be both highly trained, and in proportion to the number of guns more numerous, and ammunition supply if possible must be more carefully studied in India than at Home. With actual columns in being this last problem should be well understood.



## REGIMENTAL EFFICIENCY.

BY LIEUT.-COL. W. C. WALTON, 104TH RIFLES.

How often may be heard such opinions as the following, expressed in various ways :—

“The utility of peace manœuvres is vitiated by the sense of unreality caused by the absence of bullets,” or “What is the use of teaching our soldiers to shoot straight when they forget all they have been taught as soon as the enemy’s bullets are flying ; indifferent shots can plaster a hillside with bullets as efficiently as can marksmen.”

The writer cannot subscribe to such opinions. There will doubtless be occasions when, in moments of excitement or carelessness, good soldiers will omit to put into practice what they have been taught during peace training, just as good golfers will at times “press,” “slice,” or “pull” and even omit to “keep their ’ee on the ba’,” though they know well that such mistakes lead to trouble. Nevertheless we also know that men who have been trained to pick up their cartridge cases after firing in peace manœuvres often maintain that habit in war, though they know that it is unnecessary in the latter case. Great is the force of habit, and the officer, who has trained his men with intelligence so as to habituate them to act soundly under peace conditions, feels a just confidence in leading those men into action, the successful result of which is the highest reward that any officer can ever hope to gain.

But this reward can hardly be anticipated by one who has omitted to give due consideration to, and instruction in, all the many branches of training which must go to produce reliable soldiers. An officer who has devoted himself disproportionately to rifle shooting will have small grounds for satisfaction on service should he discover that although his men can shoot very straight when they have an enemy to shoot at, they cannot, for instance, get to the fire position in good time owing to want of powers of physical endurance, or have no desire to close with the enemy owing to want of confidence in their bayonet. They may even be stopped by an obstacle they ought to be able to surmount, or be slow in obedience of orders owing to want of drill. Perhaps they may be unable to judge distance, or cannot entrench rapidly. What will be his feelings when he cannot obtain information, or pass orders, owing to deficient signalling practice and scouting ; or when he finds his patrols captured or shot, his advanced guard blundering into disaster, or his outposts rushed ?

It will hardly be denied that ignorance of any one of the matters mentioned above may stultify a knowledge of all the others, and most officers of experience will probably admit that it is extremely



difficult to select any one branch of training with a certainty that that is the most important, and may be practised at the expense of the rest. There is, however, one branch of training which has been selected for reward, and only one.

We are not told that this selection was made because that branch is of greater importance than any other. Such an inference seems a logical one; but it also seems possible that the absence of any practical proposal for instituting a system of reward for general proficiency, as against proficiency in musketry alone, may account for the selection of this one branch.

This article is written in the hope that it is only the absence of such a proposal that stands in the way of its adoption, and in the belief that such a proposal is not only possible but desirable.

Many useful suggestions can be made by regimental officers, and if this article gives rise to an expression of their views, it will not have been written in vain.

One axiom must, of course, be observed in all discussions of this nature, namely, that no further expenditure must be proposed. The reward for general proficiency must not be in excess of, or other than, the sum now allotted for musketry prizes. The idea that the money might be found regimentally will not be discussed here.

Nor is it proposed that there should be any interference with the prizes allotted for inter-regimental competitions, such as those given at divisional assaults-at-arms and rifle meetings. These inter-regimental contests have their own uses, but the results obtained from them are quite different in character from those obtained from regimental competitions. The latter should tend to produce all-round proficiency in the regiment, whereas the former give rise to the extra proficiency of a few men in each regiment, resulting in the exhibition of a high standard and the setting of a high ideal.

The proposition is that the prizes for the annual musketry course should be set free for distribution for the promotion of general efficiency.

The annual musketry course should be carried out as usual. Only after experiment can it be proved that the musketry would suffer from this arrangement. Having thus cleared the ground, let us proceed to discuss the details of a prize scheme best calculated to produce regimental efficiency.

It would be difficult to contrive a scheme in which prizes can be given for individual merit, moreover the efficiency of the whole rather than of a few individuals is the object in view. Therefore it is proposed that a company, or better still, a double company should be the prize unit.

Thus we arrive at a championship double company scheme. Each man in the winning unit should receive a proportion of the prize money.

Such a competition has the additional advantage of inducing every man to "play the game" for the honour of the unit to which he belongs, and is a fine incentive to all ranks to do their best

in all branches of training. Exceptions can be made in the case of men who have spent their time in hospital owing to preventible disease, or in prison owing to misconduct, and so on.

There will certainly not be time for every man to take part in each competition, but this difficulty can be overcome by a nice mixture of selection and drawing lots. By this means every man will receive some training in most subjects, though he may not actually take part in the competition. The best time to hold the competitions will be during the drill season, when everyone is present, particularly towards the end of the drill season.

In the case of detachments there may be a difficulty, but this should not be insuperable, and schemes can be modified accordingly so long as the main object is kept in view.

The following is a detailed scheme for double company championship which has been practised with slight alterations for two years and found to work well, though it is doubtless capable of improvement.

The winning double company in each event is marked 1; the second 2; the third 3; and the fourth 4. The double company with the lowest total wins the championship.

The judging committee is formed of the C. O., the adjutant, and the quartermaster, since they are not specially interested in any particular double company. This does not preclude other officers from being called in to assist where necessary, as for instance in laying out courses, or in judging bayonet combats.

One last word before introducing a list of events showing how teams may be chosen to meet the object in view:—

Let those officers who consider themselves overworked read no more: this proposal will not agree with them. On the other hand, let all who think that there are at present too many British officers in Indian regiments consider this scheme well: there is work here to keep all the British officers fully employed. This appeal is not to those who feel “all of a tremble” when confronted by the prospect of hard work. But those who honestly believe that there is not work to keep fifteen officers fully employed in an Indian regiment during the drill season may be glad of the suggestions made here. A sphere of action for all is indicated, which need in no way interfere with the initiative of Indian officers.

To begin with, a few “general rules” will be found necessary, as, for instance, that lance-naiks will count as privates for purposes of the championship competitions. Also that, after a competition has begun no unauthorised communication may be held by any team with any one. The suggested list of events is as follows:—

1. *Tug of war*.—Ten of any Indian rank per double company.

2. *Bayonet fighting*.—Teams of 20 men to be selected as follows:—15 men to be selected by the D. C. C.s. from one half company in each double company; these half companies to be drawn by lot a few days before the event. The N.-C. O. and remaining 5 men to be selected by the D. C. C. from the D. C.

3. *Gymnastics*.—Teams of 40 men to be selected by D. C. C. from a company drawn by lot a few days beforehand. Ten men to be allotted by him to each of the following exercises:—

- (i) Three practises on gymnasium apparatus.
- (ii) Physical training without arms.
- (iii) Physical training with arms.
- (iv) Obstacle course.

4. *Wrestling*.—Teams of 5 men per D. C. to be selected as follows:— 3 men to be selected by D. C. C. from a section which will be drawn by lot a few days beforehand, and two men to be selected by the D. C. C. from remainder of D. C.

5. *Cross Country Race*.—Teams of 40 men per D. C. to be selected by D. C. C.

6. *Hockey*.—Double company teams which may include 1 British officer in each.

7. *Escalading*.—Three teams per D.-C. of 1 N.-C. and 6 men each, selected respectively from three sections drawn a few days beforehand.

8. *Drill*.—One company per D. C. to be drawn by lot a few days before and parade as strong as possible, to carry out—

- (i) Company Drill—under company commanders.
  - (ii) Firing Exercises
  - (iii) Rifle Exercises
- } Sections will be selected by lot from the above company to perform these under their section commanders.

9. *Judging distance*.—Sections chosen by lot to undergo tests in laying rifles and fixing sights on objects indicated; section commanders' indication of target, and judgment of distance; accuracy shown by men in understanding and acting on section commanders' orders.

10. *Shooting*.—A match on the terms of the C.-in-C.'s competition.

11. *Maxim gun*.—Double company teams of 1 gun section each.

12. *Scouting*.—Teams of 1 N.-C. O. and 8 men per D. C.

13. *Tent pitching, striking and loading*.—One team per D.C. of 1 N.-C. O. and 8 men to be selected from a section drawn by lot a few days beforehand, also 1 mule attendant.

14. *Entrenching*.—Problem set to each D. C. and marked by C. O. Tools and materials available to be equally distributed, and a time limit fixed. The work should be judged on proportion of men available in each D. C.

15. *Signalling competition*.—Teams of 6 N.-C. O's. or men per D. C. for flag signalling and separate teams of 8 men per D. C. for semaphore.

There are doubtless other competitions which can be thought of, for instance, outpost work can usefully be taken in conjunction with entrenching, or there may be a marching competition, or a field firing problem may be included, and so on. Much depends on the situation and circumstances of the corps concerned.

Commanding officers are personally responsible, under the direction and supervision of brigadiers, for the efficiency of the units entrusted to their charge, and may be trusted to decide how the programme may be varied, and how the prize money can best be distributed.

To sum up. It is urged that musketry is not always the subject that requires most encouragement in a regiment, and that by setting free the musketry prizes for allotment as required, all-round efficiency will be promoted. The interest and keenness of the men is aroused by new competitions; and competitions, as suggested, increase *esprit de corps*, improve tone, and teach our men to "play the game."

Experience has proved the success and popularity of a championship scheme run on the lines suggested, and although in the experiment referred to the prize money was provided in excess and not in *lieu* of "musketry prizes," it is thought that this latter fact cannot lessen the force of the deduction that a prize for all-round proficiency would give better results than the present system of individual prizes for musketry proficiency alone.



## NOTES ON THE CONDUCT OF NIGHT OPERATIONS.

BY MAJOR E. P. SEROCOLD, *p.s.c.* KING'S ROYAL RIFLES.

The following notes have been put down from memory of experiences of night work with infantry:—

In Field Service Regulations, Part II, Ch. IX, night operations are classified as night marches, night advances, and night attacks. All these are operations involving movement. The only references to night operations when halted are in Ch. IX, sec. 140, on defence, and in Ch. V, secs. 88 and 89 on patrols.

I propose to deal with operations involving movement first, and will take them in the order in which they nominally occur, *viz.*, the march, the advance, the attack. Before any of these can be undertaken, however, a careful reconnaissance of the route to be followed and of the ground to be crossed must be made.

The Japanese, from whose work in Manchuria in 1904-05 we can get the latest experiences on active service of this subject, went far beyond any contemporary European standard in reconnaissance and in night movements. All officers, especially those of infantry in the foremost lines during an action, were expected to study all the ground that they could see between them and the enemy, with a view to subsequent night movements conducted with the object of gaining some material advantage before continuing the action next day.

This duty was so efficiently performed that in the numerous night advances and night attacks which they made, the Japanese relied almost entirely on the knowledge of the ground acquired during the fighting of the previous day or two, and seldom used a compass to guide their movements.

Reconnaissance of a route for a night march does not offer any special difficulties; but reconnaissance of ground for a night advance or a night attack must generally be carried out by several observers from different points of view. Features of the ground which require a close examination but which are under the close fire of the enemy must be reconnoitred by selected individuals creeping forward.

In these cases, as in all other reconnaissances under the eyes of the enemy, if reconnoitring officers are seen and their business suspected by the enemy, he may take steps to meet the subsequent movement and turn it to his own advantage. Reconnaissances must therefore be made as unobtrusively as possible.

For a night march, even if the route to be followed is not a well defined road or track, it is not generally necessary to use a compass bearing, nor to march by stars. Such methods entail slow movement. The route may be marked by pieces of paper anchored under stones, or stuck on branches or bushes; or small heaps of brushwood or stones may be made. These must be made under

the direction of the officer who is going to guide the column, who must make himself well acquainted with the route by day in order to avoid any chance of a mistake at night.

If a telephone is to be laid to connect the column with troops in rear during the march, the wire may be laid early in the evening and will serve to guide the column during the night.

The places where the route crosses streams, ravines, or other obstacles must be made as easy as possible by working parties during the previous day. If a difficult crossing, such as stepping-stones, or a ravine with steep sides, is not made easy, the men will cross in ones and twos and a lot of distance and time will be lost. At such places several crossing places should be made if possible, and at least one officer must be posted at each place to show the troops the crossing, and, when all have crossed, to report the fact to the commander of the column. The head of the column must be halted on the farther side at sufficient distance for the column to reform.

Men are very apt to break into a run *after* crossing a difficult place. This does not decrease the delay, and the officer at the crossing should tell every company officer as he passes to follow the troops in front quietly until he reaches the main portion of the column. The first troops to cross may be used as connecting files to mark the route between the crossing place or places and the head of the column. The spot where the head of the column is to halt should be selected and marked beforehand. During a night march silence is not all important but it should be insisted on for the sake of discipline. Good march discipline is essential at night, as much for the comfort of the troops as for the satisfactory execution of the march. The rattling of mess-tins, rifle slings, and tools, can be stopped by wrapping bits of paper, rag, or wisps of grass round the offending article. This must of course be done before starting on the march. Halts need not be very frequent, but they should be from five to ten minutes in duration, and everybody must at once sit or lie down in the ranks; lying down is best. At the head and tail of each company a N.-C. O. or responsible man must be posted, who will keep awake during the halt, and see that all men fall in and move when the march is resumed. A staff officer must go to the tail of each brigade, or to the tail of the column if it is not too long, to see that no part of it is left behind.

The object of a night advance is to cross ground which the enemy may be watching, to deliver a surprise attack at dawn or soon after, having avoided the enemy's scouts and patrols, or having captured or killed those met with.

Having reached the position of assembly, a preparatory formation is adopted. In Field Service Regulations, Part I, sec. 137 (3), three conditions are given which govern the formation to be adopted:—

- (i) It must bring the force under the direct control of the commander;

- (ii) It must facilitate a rapid deployment for attack ; and
- (iii) It must be an easy one to lead across country.

To these I should add that it must be compact, so as to reduce the chance of meeting hostile scouts or patrols.

Many formations have been suggested and tried, and the most satisfactory ones are variations of columns moving to a flank in fours or file. The size of the columns selected depends on the strength of the force and the strength of the companies, for a strong company in column of fours takes appreciably longer to form line on its leader than it would if it were marching in two half companies or four sections. The intervals for deployment between the heads of strong companies are rather wide, and increase the difficulty of maintaining correct intervals in the dark, besides affording a chance for flank companies to become detached and lost. On the other hand the fewer the columns the more easily the men march. On easy ground, when the night is not very dark, large columns and wide intervals may be satisfactory, while on rough going and on a dark night or in bad weather small columns with small intervals will probably prove a more suitable formation. On broken ground small columns can get along with less delay than large ones.

A line is an unsatisfactory formation for movement. It is difficult to keep straight, and is liable to be broken. It always requires extra precautions to ensure that parts broken off do not get lost. Even on quite easy grounds the flanks of a line very easily lose their place. Sometimes they swing round like horns, and get across the front of the remainder ; and sometimes they hang back, eventually dropping off and getting lost. Either of these causes delay and may prove fatal to the success of the advance. A line formation should therefore only be used for a very short distance.

A brigade is probably the largest force that can be used in a night advance. If a larger force is employed it would probably move in two or more bodies unless the conditions were exceptionally favourable. As the assault will be delivered in line, either in two ranks on in single rank, the front on which the first line is drawn up at the position of assembly must be that which it will occupy in line when deployed for the assault. The distribution of the brigade in two or more lines depends on the circumstances of each case, but probably two to two and a half battalions is the most that would be allotted to the first line. Such a force would occupy in line (two ranks) from 650 to 850 yards.

Let us assume, for the sake of argument, that there are two battalions, each of eight companies, in the first line, and that they will occupy when deployed 650 yards. If these 16 companies march in fours at deploying interval there will be 15 intervals of 38 yards each between them. If they move in half companies in fours at deploying interval, there will be 31 intervals of about 16 yards each. If they move in sections in fours there will be 63 intervals of about 6 yards each. If the companies march in pairs, *i.e.*, in column of fours side by side, there will be only 7 intervals, but each



interval will be nearly 84 yards. If each company moves in company column there will be 15 intervals of nearly 33 yards each.

These figures form a guide to the formation to be adopted, for the greater the interval the more difficult it becomes to keep it accurately throughout the advance to the position of deployment.

Whatever the interval, by far the most satisfactory way to keep it is by filling it with connecting files who know how far apart they must keep in order to maintain the correct deploying interval.

The guide who leads the advance from the position of assembly will use a compass bearing, or stars, or a combination of both, to maintain a true direction, or he may rely on an intimate knowledge of the ground previously obtained. A column of direction, which will follow the guide, must be detailed. A central column is most convenient for this purpose.

With troops on a wide front, as they will be, the advance must be on a true line. Any change of direction, whether intended or otherwise, will cause confusion, unless previous arrangements have been made to meet it.

It is essential that the troops shall be aligned at the position of assembly on a front at right angles to the line of advance. If this is not done confusion will arise from the commencement of the movement, as the troops will be marching diagonally and will crowd on to or diverge from the column of direction.

It is easy to align the troops on the correct alignment before starting by using a compass set to the bearing of the direction of the advance plus or minus  $90^\circ$ . An officer with a compass thus set moves along the alignment, but about 5 yards away from the troops, to prevent his compass being affected by the rifles, accompanied by an officer of the battalion who orders each column to dress as may be required. It is easy to dress up but difficult to dress back in the dark. The compass used for this purpose may come in useful during the advance if the columns get out of their dressing or become otherwise disordered. Its bearing should therefore not be altered.

A procedure similar to the above should be adopted if there is a change of direction in the advance. The true bearing of the line of advance should be made generally known, and all officers should set their compasses before starting. This may save disaster if any part of the force gets detached.

The guide, whether he uses a compass, stars, or local knowledge, will probably move at an uneven pace, and will frequently stop to verify his position. As frequent changes of pace and short checks tend to produce confusion among the troops, it is undesirable that they should be compelled to move when the guide moves and to stop when he stops. A buffer of connecting files between the guide and the head of the column of direction obviates this. A number of men, varying from 3 or 4 on a clear night to 9 or 10 on a dark night, are placed in file at the head of the column of direction. Each of them has a towel or large white handkerchief on his back.

The leading man, whose rifle must be carried by No. 2 as it might upset the guide's compass, follows the guide closely. When the white cloth on his back is still visible but getting faint, the next man follows, and so on, until all the files are moving. They must be cautioned not to close on the file in front unless he halts.

When all the files are strung out, the troops must move when the guide halts, the files close up to him before they halt, and if the troops come up to the last file and find him halted, they must of course halt too. When the guide moves on again, the files must string out behind him as before, and the troops move when the last file has moved. In practice, if sufficient files are used, the guide will seldom be caught up by the troops, and they will thus be saved from the short checks which are so annoying to the men in the ranks.

The guide should have no other duty beyond leading the force. The task will require all his attention. He should be accompanied by an officer who can see that the files do their work properly, check the rate of marching, and attend to similar matters. By previous arrangement the guide should halt after every 150 to 200 yards and let the troops come up to him. A halt should also be made after crossing any bad ground, to see that the formation is preserved. These halts will give the commander of the force an opportunity to ascertain through his orderly officers that each unit is in its proper place—*vide* Field Service Regulations, Part I, secs. 132 (6) and 138 (4).

Communication from front to rear wherever it is required should be maintained by connecting files. These men should have white towels or handkerchiefs on their backs and must be ordered to keep their respective distances carefully, both when moving and when halted.

Luminous paint and discs, etc., are not usually available on active service, and ought therefore not to be used at peace training.

A certain amount of elasticity in movement must always be allowed for, but it must be stopped short of dislocating the formation. It must be accepted that the heads of the columns will not be in a straight line when moving, for the columns furthest from the column of direction will naturally not get the signal to move until a little after the directing column. This can be reduced to a minimum by making the directing column stand up as a signal to all to get ready to advance, and allowing a short interval to elapse before giving the directing column the signal to move. Whatever little incorrectness there may be when moving will generally remedy itself at each halt, especially after the troops have had a little practice.

The commander of the force must remain always at the head of the column of direction, and commanders of battalions and companies must move on the inner flanks of their respective units.

All connecting files must inform the nearest officer at once if any part of the force loses touch. If such an accident is discovered at once, it can often be put right, for troops moving always make a

little noise with their feet, even on turf, or if they are up wind their scent is often noticeable. But neither of these clues will help if the two parts have had time to get well separated. Unless the part detached is found soon it is not worth while sending many people to look for it, as they will probably lose themselves in their attempts.

The position of the second line with relation to the first line must depend on the nature of the attack which the enemy is expected to make, should the force be discovered before it has got near enough to deliver its assault.

It must not be forgotten that the enemy may get warning of the night advance, and may either await its approach, or may send a force out to ambush it. In the latter case an attack on the flank or rear of the force would offer the best chance of a decisive success with the minimum of loss: and the attack might be made by fire or with the bayonet.

Firing at night can of course only be at close range, and, if the second line follows straight behind the first one at any distance less than about 400 yards, it will get the benefit of a good deal of the fire directed at the first line, which it can do nothing to assist.

Again if the enemy makes an attack with the bayonet the first line, in two ranks, ought to be able to repulse it; and if it cannot the second line would be unable to do much, if straight behind the first line, on account of friends and foes being in a *mêlée* in front of them. If attacked in rear, the same conditions are found, as the first and second lines would no doubt be turned about. If attacked in flank, the flank columns on the exposed flank would be first halted and turned to face the attack, others being moved up in line with them as circumstances admitted.

I think that the second line should be in echelon in rear of one flank, or of both flanks if it is strong enough to be divided into two parts, unless one flank is secure from other reasons. Thus placed from 50 to 150 yards in rear, according to the intensity of the darkness, it should be able to act with some freedom against any attack on the front line, and if attacked itself, the first line can equally well come to its help.

Communication between the first and second lines must be kept by connecting files. A commander of the second line, or of each part of it, if it is divided, must be detailed, and one or two orderly officers for it should be with the commander of the force.

If picks and shovels are required by the force, they must be carried by the inner companies of the second line, because (1) the men carrying them are unprepared for immediate action, as they must either sling their rifles, or must carry the rifle in one hand and the tool in the other; and (2) if any entrenching has to be done the first line will probably be in the best position to cover the working party, and the work should then be done by the second line, which can easily be moved to the site of the trenches. It is not easy to carry out the converse, *i.e.*, to move the second line up to cover the first.

In the absence of a general reserve, *vide* Field Service Regulations, Part I, sec. 137 (7), I am of opinion that the rôle of the third line should be that given to the general reserve, in Infantry Training, sec. 129, *viz.*, to complete an attack, to confirm a success, or to meet an unforeseen emergency. Since any action taken in the first two cases will almost certainly only be taken after daybreak, while the third may occur either by day or night, and since it would not be compatible with its rôle to tie the third line to the rest of the force, I am in favour of its being a separate formation under its own commander. It must be handled with much judgment, for it must be near enough to the first and second lines to give them help, but it must be far enough away to avoid being involved with disorganized troops in an unforeseen emergency. It must be connected with the commander of the force, by telephone for choice; it must have its own guide, and both commander and guide should have reconnoitred the ground on the previous day.

The third line should carry picks and shovels, for it may be called upon to entrench either on the enemy's position when captured, in addition perhaps to the troops of the second line, or to prepare a position in case of a reverse, or to cover a withdrawal.

If a general reserve has been detailed it may be advisable to have only two lines, both of which will be employed in the assault. Any advantage conferred by having a third line which is not going to take part in the assault is in my opinion outweighed by the increased power given to the first and second lines by the additional men.

But circumstances alter cases, and the great thing is to dispose the troops to the best advantage to secure success.

As regards protection during movement there are three ways in which the protective troops can be employed to cover a movement.

- (1) The enemy's force may be closely watched by scouts so that not even a patrol can come out without being noticed and reported, *vide* Field Service Regulations, Part I, sec. 75 (5). This is a development of the course suggested in Field Service Regulations, Part I, sec. 137 (3).
- (2) Scouts can be employed near their own force to ward off the inquisitive patrols of the enemy—Field Service Regulations, Part I, 137 (4).
- (3) To move the force in as compact a formation as possible, using a few scouts in front of it and a small patrol a short distance away on either flank. The enemy's scouts and patrols are less likely to meet a force on a narrow front than on a broad one.

The advantages of the first method are:—

- (a) The sense of security produced by the knowledge that the enemy is surrounded by a net, and that any escape through its meshes will be reported at once.

- (b) The ease and pace of the movement will be increased, for there will be few delays while reconnaissance is being made to secure the passage of the force.
- (c) With the force there need be comparatively few men outside the formation. Consequently there is a reduced risk of a man losing himself and walking into the enemy's lines, thereby arousing suspicions; and also the force can act with freedom if attacked.
- (d) If an enemy's patrol comes in the direction of the force it can be shadowed by some of the observing scouts, and when it has got some way from its own lines, it can be killed or captured.

Its disadvantages are:—

- (a) In open country it takes a great number of men to make an efficient net round the enemy. Unless the net is efficient the men would be better employed close to their own force.
- (b) The chance of an enemy's patrol finding them and raising an alarm, which would discount the probability of the attack being a surprise.

The advantage of the second method is that the chance of the force being thrown into confusion by a sudden attack is small. But with well trained and well disciplined troops there should never be much chance of their becoming disorganized by such an attack.

Its disadvantages are:—

- (a) The encircling net, if broken, is useless, and it is liable to be broken by (i) the scouts losing touch on a dark night, in bad weather, or (ii) when moving over rough ground or among trees.
- (b) An enemy's patrol may locate the line of scouts and get away with its information without being noticed.
- (c) The chance of being located by an enemy's patrol is increased, because the circle of scouts must be some way out from its force, and consequently there is a bigger object to locate.
- (d) In case of an attack during the movement the scouts would be unable to offer any serious resistance, and would mask the front of their own force.
- (e) Unless they move in threes, or pairs at least, the instructions contained in Field Service Regulations, Part I, sec. 138 (5), regarding the capture of hostile patrols and scouts would be impossible to carry out.

The advantages of the third method are:—

- (a) The force has its front and flanks watched, but by so few men that there need be no hesitation about closing with the enemy, or about opening fire if such an extreme course were necessary.
- (b) If a hostile scout or patrol, having escaped the vigilance of the scouts in front or the patrols on the flanks,

approaches the force, he may be captured by them when he tries to pass by them on his return.

- (c) The flank patrols are so small that, if an enemy's scout locates them but does not locate the main body, their suspicions will not be aroused.

Its disadvantage is that the scouts and patrols are not closely connected with the main body, and may go astray or get captured without the force knowing it.

I am of opinion that a combination of the first and third methods affords the best security for a force moving at night within reach of the enemy's patrols.

Under this heading of night work when halted come night outposts and defensive measures at night.

Outpost duty at night is undertaken most disadvantageously when the outpost troops only reach their ground at dusk and are unable to get acquainted with it before darkness sets in.

The two duties of outposts are reconnaissance and resistance, and at night unless the reconnaissance is efficiently carried out, the resistance will be small, for an attack on a piquet at night is a matter of a few moments only; and if the piquet is unprepared it will be overwhelmed almost at once. But if it is ready and on the look out for an attack, it may quite possibly hold off superior numbers, at least until support arrives. The reconnaissance then must be carefully conducted and the piquets must make preparations for resistance and to guard against sudden attack.

For effective reconnaissance I am in favour of a ring of scouts as close to the hostile force as possible, and watching particularly the likely routes by which a force might move out. Combined with this, the stationary force should be surrounded by a ring of standing patrols, who watch all the lines of approach, and who can communicate readily with the piquets behind them.

Telephones should not be used in front of the line of piquets, as they may easily give a hostile patrol or scout a clue to the position of the piquets.

It is a maxim in night work that the less moving about by patrols and scouts the better. The moral effect of feeling that one is being watched by a ring of silent hostile observers is very great, and is easily established if men are trained and understand their job.

Shots are now and then exchanged at night by scouts on patrols. This can seldom be justified. Should the enemy move out in any force, the observers must send a warning back to their outpost line, and must shadow the enemy's force, reporting its movements if possible.

Respecting the defensive part of the outpost system, I have tried wire entanglements, trip wires with tins containing pebbles, or with spring guns and flares.

The object of obstacles is to reduce the front on which the enemy can approach, and, more especially at night, to block the

routes by which a hostile force might move to the assault. Small parties can go almost anywhere at night, but no force of such a size as would be used to make a serious attack can afford to risk losing its formation, and it will, therefore, use easy ground which is free from natural obstacles, at any rate after leaving the position of assembly.

The disadvantage of all arrangements with single wires is that any one with a pair of wire-cutters can make them useless.

A wire entanglement is generally effective, provided that there are plenty of wires close to the ground to prevent men crawling underneath. A coil of wire pulled out loosely, and secured on the ground so that the kinks can tighten when pulled by a man getting caught in them, is useful. It should be placed just inside the outer edge of a wire entanglement.

Spring guns and rattling tins can be set off by a stray animal, which is a disadvantage.

Flares may be usefully employed by standing patrols at defiles which the enemy is likely to cross during a night movement. They should not be lighted until the enemy has passed, because a party is less likely to be sent after the patrol from the rear than from the front, and the patrol has a good chance of escaping.

Flares can be made with carbide, and a bit of fuse to light them by; but an excellent flare, for peace training at any rate, is that in common use by game-keepers. It is ignited by merely hitting the end of the flare with some force against a stone, or the ground, or even one's boot. It gives a very bright light and burns for about a minute. Patrols must be given careful instructions when to use them. For example, a party of the enemy consisting of from 6 to 20 men might be signalled by one flare. A party of from 20 to 100 might be worth two flares, and any force over 100 three flares. These flares should be lighted in succession, the men counting 50 between each flare, so that the signal may not be misread. It is very disconcerting for a force approaching its enemy's position to be confronted by a row of bonfires. These can be easily arranged if goose heather, bracken, straw, or grass, dry enough to burn, can be got. They must be far enough in front of the line of resistance not to light it up and give an advantage to the attackers. They can be lighted by the protective standing patrols just before they fall back before the enemy's advancing force. They must not be put in position by daylight as the enemy would be sure to notice them and avoid them.

In conclusion, night work affords opportunities for using small forces with boldness, almost amounting to impudence, and ingenuity; and troops who are accustomed to night work and are well disciplined will always have an advantage.

Success at night increases *moral* among the troops who gain it even more than success by day.

## NORTHERN ARMY PRIZE ESSAY 1911.\*

BY LIEUT. C. I. SHEPHERD, 53RD SIKHS.

**Subject: Manœuvres as an imitation of war are frequently full of unrealities. To what extent can their likeness to war be reasonably increased?**

Let us begin by gaining a clear understanding of the subject of this essay. A statement is made "*Manœuvres as an imitation of war are frequently full of unrealities*" and a remedy is called for "To what extent can their likeness be reasonably increased?" To the statement, there remains but little to add. It is unfortunately only too true. There is no need of a cloud of witnesses to testify. Year after year, our manœuvres are full of unrealities and teem with impossible situations. Their name is "legion." These are some of the devils we are called upon to exorcise:—undue and unnecessary exposure under fire; disregard of service conditions; elasticity of imagination, and the lack of it; manœuvre cunning; and last but not least, that archfiend "financial consideration."

On manœuvres we are all fearless and brave. We have read that "a firm determination in all ranks to conquer is the chief factor of success" and, again, that "success in war depends more on moral than on physical courage;" so we shut up our glasses with a snap and make straight for the enemy's position, forgetful of the caution that even the highest moral qualities may not avail without careful preparation and skilful direction. It is an umpire who reminds us, and we smart under his decision. We imagine a conspiracy to be afoot to break our military spirit and repress our moral qualities. By the umpire's decision we are given ample time to ruminate on the injustice of it all, and the fires of our ambition and martial ardour appear to be quenched. But in reality they are only smouldering and ready to burst into flame again at the next opportunity. This behaviour gives us a clue which may develop into a partial solution of our problem: namely, that the reason why our manœuvres are not a truer image of war lies not only in the conduct of those manœuvres by our higher authorities and their staffs, but much nearer home also, *i.e.*, in ourselves, in the degree of interest taken in tactical situations by our regimental officers, and in their ability to further intelligently the object of all manœuvres, which may be styled the "dress rehearsal for war."

The *fons et origo* of a very large proportion of impossible situations is some tactical error due to the action of subordinate commanders. Other unrealities are caused by (a) flaws in the organization of our administrative services, which, in peace training,

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\* This essay was adjudged first by the Army Commander out of 14 submitted.



are crippled by financial considerations ; and (b) strategic errors. These latter will be referred to later on, and in the meantime let us turn to the remedies which lie in the hands of our regimental officers and unit commanders, who, by their system of training, can do so much to eliminate those evils.

Moral force is of vast importance. Many of the factors which create it cannot form part of training in peace, but others such as *esprit de corps*, pride of profession, power of endurance, etc., can be fostered and cultivated. The offensive spirit does not entail the hurling of troops against an enemy whenever found, without first obtaining information as to his numbers and dispositions. The axiom that time spent in reconnaissance is seldom wasted is as true in the case of a unit commander as it is for a commander-in-chief. Now, reconnaissance includes not only the obtaining of information but also its transmission. Here we have two pegs on which to hang the cloak of criticism. How often have we seen rash and foolhardy scouts examining a position and paying no heed to the enemy's fire, but trusting to their horses to evade the capture they so richly deserve ; and how often have we seen fearless signallers, emulating the hero of Chakdara, contemptuously oblivious of the fire concentrated on them by an exasperated foe ? These are instances where the regimental officer can assist the cause.

These minor points of training have been brought to light in order to emphasise their importance in relation to the subject under discussion, but the fact must never be lost sight of that these errors should be eliminated during the company or regimental training of units and that manœuvres are organized for the exercise of the higher commanders, their staffs, and administrative services, while the fighting troops put into practice those lessons which they should have already learnt.

It would be well to mention here that unless field practices are efficiently and practically carried out, the soldier's confidence in his rifle will be rudely shaken when confronted by service targets ; and he must be thoroughly taught that scores in range practices bear no relation whatever to the results to be expected when firing under service conditions even in peace time, and that false standards of fire effect set up under artificial conditions lead to misconception as to the value of fire.

In these days of modern firearms, the difficulty of obtaining information has admittedly increased and battles have become far more protracted than formerly. This fact is apt to be lost sight of on manœuvres, where it is as hard to carry out this impression realistically as it is to obtain information on active service. To enforce this, commanders should be called upon to submit to umpires all the information they have gleaned before they are allowed to act on it, and the umpires should decide whether they consider such action justified in the light of the information obtained. In the exercise of these powers, great care would have to be taken by umpires not to influence the commanders in any

way, nor to cramp their initiative, which is as invaluable a factor as the cultivation of military knowledge. The provision and selection of umpires is a very important matter and enters largely into the scope of this essay. But of them, more anon.

If we turn to the definition of manœuvres, we are told they consist of operations—

- (a) between opposing forces, or
- (b) against a skeleton force.

A moment's thought should convince us that a far greater similarity to war will exist in the case of (a) than in that of (b). So the latter should only very sparingly be employed. There is no doubt that when sufficient troops are not available, resort must be made to skeleton enemies, but their employment adds to the already too long list of unrealities, those joints in the armour of manœuvres, which can only be filled by carefully fitted strips of imagination. Sometimes the imagination supplied is too big and the joint is forced wider open, at other times it is too small and the crevice still remains unfilled. Moreover the same degree of interest is not maintained as in the case of a real enemy, and to get the best work out of troops there should be no lack of this valuable commodity. For the same reason, all orders and instructions should be clear and concise, for nothing more effectually detracts from the ardour of troops, nor more speedily diminishes their interest, than counter-orders and confusion.

It has been suggested above that the advisability of committing a force to a realistic action should be judged by the umpire on the value of the information brought in to the commander and on any other information which he himself may possess. These powers, and indeed the existing duties of umpires too, involve great responsibilities, a fact which should carry great weight when the question of their selection is being considered. It is a point which is generally recognised, but one which admits of even more careful consideration. It is also a problem, the solution of which would go far to remove many of the causes of unreal situations. In order to carry out, to the greatest advantage, the powers with which this staff is invested, its members should consist either of officers of ripe experience, or of officers who by virtue of some special training are eminently suited to wield the authority conferred on them. As a general rule, a typical umpire staff, like all Gaul, *divisa est in partes tres* and may be said to consist of (a) those who are born great, (b) those who achieve greatness, and (c) those who have greatness thrust upon them. It is the latter class which we should strive to eliminate. A bad or unwilling umpire is a useless bargain. Class (b) are those who qualify themselves for the task by the intelligent study of our profession, and includes holders of Staff College certificates who may be doing duty with their regiments, as required by regulations, between two tours of staff duty. Why should not their services be utilised? It may be argued that regulations require them to return to their units in order that they should not lose touch with regimental duties, but will they be doing so if they are

attached for manœuvres to other regiments of their own arm? Their military education is too valuable to be lightly overlooked when the period at stake seldom exceeds a fortnight. The vacancy they would thus create in their corps would allow a more junior officer to undertake the responsibility of a higher command. Class (a) includes another valuable type of senior officer who like the King can do no wrong. They enjoy the respect, and their decisions command the confidence, of all. They may be Fortune's favourites, but their experience has given them the soundest of tactical ideas and a quick perception to appreciate a situation correctly. These are the umpires who are born not made.

The duties and rules for umpires are so admirably and clearly set forth in our Training and Manœuvre Regulations that it seems almost incredible that unrealities could ensue if the instructions were faithfully carried out. But their strength lies in their intelligent interpretation by individuals, and for this reason a list of classes (a) and (b) umpires should be kept in each brigade. Training and Manœuvre Regulations, sections 56 - 59, supply such valuable aids to the solution of our problem that the temptation to embody them *in toto* is a strong one, but we are concerned rather with the amplification of our existing guides than their mere reiteration. With regard to the decisions of umpires, there is one point where it is difficult to apply service conditions without sacrificing some portion of the training of the combatants. The following example will explain. A unit is held by an umpire to have been repulsed with heavy loss, so he rules that it should be put out of action for some stated period and perhaps retire to some stated point. This is done, but with what result? At the expiration of such period, the unit comes to life again and, like a giant refreshed, returns to the attack with a renewed vigour when it would be more realistically employed in collecting its wounded and burying its dead. In fact, the penalty inflicted has allowed the unit *recueillir pour mieux sauter* and its weight may perhaps supply the additional impetus required to drive home a successful attack. So here is a problem, capable of only one solution, and which must be sternly faced if manœuvres are to be raised to the higher level of war. That unit must take no further active part in the existing phase of operations. We, remembering that units are supposed to have completed their training before they come to manœuvres, must harden our hearts and, until the conclusion of the phase, find for it some employment other than would effect the tide of the battle in which they are incapable of taking further part. It is only right that the adversary should be allowed to feel the effect and reap the full benefit of his success. Imagine the commander of a force acting on interior lines against two bodies of the enemy. Having crushed one, he advances against the other, only to find that the first snake is "scotched not killed" and is now in a way successfully to prevent him from reaping the reward of his first success. What employment can we find for these hydras who cling so tenaciously to life? They

should again take their places in the general scheme by appearing as reinforcements when or where required, or by being placed at the disposal of the director, who would either utilise them, during that phase, in such a way as would most usefully and realistically lend itself to the advancement or completion of the general scheme, or retain them as the necessary levers by which to control the course of operations. It will be seen that it is most desirable that commanders of troops should communicate decisions of umpires to their senior officers and the troops on their flanks.

Another point for discussion is the advisability or the reverse of frequent suspensions of hostilities. This is the province of the director rather than the umpire. By abolishing suspensions, troops become subjected to the physical and mental strain which they will be called upon to undergo in war, though by doing so, a proportion of the instructional value of the exercises may be lost. Moreover, the longer the phase, the harder becomes the umpire's task of giving realistic decisions and at the same time maintaining a genuine situation of general interest. Good umpiring can achieve this, but only in close co-operation with the directing staff, between whom it is essential that the most perfect system of communication shall exist at all times in order to ensure the smooth working of manœuvres. Therefore, although it is not desirable that the whole of the operations should be continuous, unnecessary suspension of hostilities is to be deprecated as tending to produce unreal situations which are incompatible with the conditions of war.

On the other hand, during the previous training of the unit, the instructional value of the exercise is greatly enhanced by frequently suspending operations to criticise or instruct, praise or blame; but this is a progressive stage to be completed before the unit comes to manœuvres. To revive a former simile in order to emphasise a point on which it is impossible to lay too much stress, the actors should be word perfect before they come to the dress rehearsal, and the services of the prompter, though present, should not be required. The instruction of troops on manœuvres is conveyed by means of a conference held usually after the reports of the umpires have been read and digested.

It is said that the chief difficulty in regulating the progress of a fight is the tendency of troops to ignore the effect of fire. This may be due to three reasons:—Firstly, a wilful disregard. This is only observed in bad troops under bad leaders; secondly, the adversary may have run short of ammunition and, hidden in his trenches, may be vigorously "snapping" at a force which remains in ignorance of the presence of an enemy; and, thirdly, insufficient indication is given, in the absence of shot and shell, that a particular force is engaged in pouring a deadly fire into a certain portion of the enemy's troops. The first case is fortunately a rare one and need not be enlarged upon. It may be dismissed with Ruskin's words that "work only is well done, when it is done with a will." The cause for the second is found in the insufficiency of blank issued to

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Another point for discussion is the advisability or the reverse of frequent suspensions of hostilities. This is the province of the director rather than the umpire. By abolishing suspensions, troops become subjected to the physical and mental strain which they will be called upon to undergo in war, though by doing so, a proportion of the instructional value of the exercises may be lost. Moreover, the longer the phase, the harder becomes the umpire's task of giving realistic decisions and at the same time maintaining a genuine situation of general interest. Good umpiring can achieve this, but only in close co-operation with the directing staff, between whom it is essential that the most perfect system of communication shall exist at all times in order to ensure the smooth working of manœuvres. Therefore, although it is not desirable that the whole of the operations should be continuous, unnecessary suspension of hostilities is to be deprecated as tending to produce unreal situations which are incompatible with the conditions of war.

On the other hand, during the previous training of the unit, the instructional value of the exercise is greatly enhanced by frequently suspending operations to criticise or instruct, praise or blame; but this is a progressive stage to be completed before the unit comes to manœuvres. To revive a former simile in order to emphasise a point on which it is impossible to lay too much stress, the actors should be word perfect before they come to the dress rehearsal, and the services of the prompter, though present, should not be required. The instruction of troops on manœuvres is conveyed by means of a conference held usually after the reports of the umpires have been read and digested.

It is said that the chief difficulty in regulating the progress of a fight is the tendency of troops to ignore the effect of fire. This may be due to three reasons:—Firstly, a wilful disregard. This is only observed in bad troops under bad leaders; secondly, the adversary may have run short of ammunition and, hidden in his trenches, may be vigorously "snapping" at a force which remains in ignorance of the presence of an enemy; and, thirdly, insufficient indication is given, in the absence of shot and shell, that a particular force is engaged in pouring a deadly fire into a certain portion of the enemy's troops. The first case is fortunately a rare one and need not be enlarged upon. It may be dismissed with Ruskin's words that "work only is well done, when it is done with a will." The cause for the second is found in the insufficiency of blank issued to

all arms, an unsatisfactory state of affairs which is the most marked in the case of artillery. This is a question which will be touched upon *infra*, in connection with distribution of ammunition in the field and the organization of ammunition columns. It is hard to find a practical remedy for the third difficulty, except perhaps in the case of artillery, the direction of whose fire might be invariably represented by the beam of light from the coloured glass of a heliograph. But even this solution is an unsatisfactory one, and until some method is devised by means of which it will at once become apparent to a body of troops that they have come under rifle, maxim gun, or artillery fire from a certain direction, the character of manœuvres can never take the form of war. With artillery using indirect fire, it is quite impossible for troops under their fire to be aware of the fact, and they should, if possible, be informed by an umpire in the event of no other means being adopted. The system of artillery firing one, two, or three guns respectively to denote the arm of the service upon which they were firing was condemned many years ago—the greatest objection to its practice being that it knocked the bottom out of artillery discipline.

The absence of all necessity for such a device in night operations enhances the value of such exercises, for here the shades of night envelop movements almost as effectually as the fog of war, and the conditions which obtain approximate far more closely to service conditions. In this class of operation, which usually partakes of the nature of a surprise, we can tell whether, as such, in real war it would have achieved success or been doomed to failure. Their peculiar properties being thus realised, night operations should be more frequently carried out during manœuvres, and more especially in this country where greater facilities exist. In order to lend greater realism to their effect, operations should be continuous night and day—a state of affairs which only bears out what has been said above, that any unnecessary suspension of hostilities is undesirable and to be deprecated.

Our manuals advise that training in peace time should be carried out in those formations and governed by those organizations which will obtain in war. Let us consider whether it would be possible to further our purpose by advocating that manœuvres of troops should be regulated by schemes which would exercise them in the duties which they would be called upon to perform on the mobilisation of the Field Army. A similar plan is adopted at Home when the troops detailed for Home defence are exercised in conjunction with the naval authorities in embarkation, disembarkation, and repelling invasions. On the north-west frontier, troops in the 1st division and the independent brigades manœuvre in hilly country and become proficient in mountain warfare, which would usually become their rôle on active service. The value of this training was so apparent that the Punjab Frontier Force was dispersed in order to make room for other units to benefit by these training grounds, and in this manner has the efficiency of the army been raised. But

it cannot be done in all cases. Troops detailed for internal defence, for instance, may be given a scheme to work upon which would exercise them in the duties required of them, but such a scheme might also involve other troops, whose duties would not be such on mobilisation, so no hard-and-fast rules can be laid down. Nor is it desirable that units should specialise in any one particular branch of the art of war, therefore such a suggestion cannot be universally adopted.

Here, another point suggests itself. Should units carry out manœuvres at war strength, or would our purpose be the better served by sending units to manœuvres at half their authorised establishment, thus smoothing the way for the working of departments and at the same time filling up those financial pitfalls with which the road to true efficiency is strewn? For, as matters now stand, it cannot be denied that, on all big manœuvres, the first and second line transport, the medical arrangements, the supply and ordnance stores, are all considerably modified or curtailed by financial considerations in order to keep the cost within the limit of the training grant at the disposal of the general officers commanding concerned. The present policy of economy and retrenchment precludes any hopes of increased training grants, so we are left to consider whether we shall obtain increased efficiency as well as a greater similarity to war by cutting our coat according to our cloth and thereby regulating the number of troops exercised according to the amount of the supply, transport, ordnance and medical personnel and materiel available.

Of these services, the supply and transport are the two most necessary and at the same time the most costly, for carts have to be hired if sufficient government transport is not available; so it is incumbent that any solution to this difficulty should take these two departments into especial consideration. This condition is fulfilled by the following suggestion, *i.e.*, that manœuvres should not take place in each division every year, and that during the years when a division has no manœuvres of its own, it should lend its transport to neighbouring divisions that have. A most important corollary to the above is that the unexpended balance of training grants should not lapse to Government at the close of each financial year, but be brought forward as an opening balance for the next year. If these suggestions are carried out, it will be seen that in each division, say, every third year, a comfortable balance should accrue to the credit of the general officer commanding, by the judicious administration of which he can transform his manœuvres into a far truer image of war than can ever be the case while he is fettered with financial considerations and hampered by limitations as to the resources at his disposal. For, not only would he then be in a position to provide his command with its full complement of first and second line transport, but also he could organize supply columns and ammunition columns such as would accompany his command in war, and from the employment of which he is normally debarred by the lack of government transport or the means of hiring its equivalent.



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Circumstances would be so altered that the present unrealistic system of drawing and issuing rations on manœuvres could be replaced by the actual method which obtains on active service. What does this mean? It means that instead of being compelled to resort to dumping down supply depôts, which are generally considered neutral, at selected localities spread over the theatre of war, base depôts and advanced supply depôts would be formed on manœuvres as they are formed in war. In other words, troops would be free to shape their course as dictated or demanded by the tide of warfare: at present they are anchored by too stout a cable to their supply depôts and their movements too despotically governed by the facilities which exist for the issue of supplies. Furthermore, the employment of field service indent forms could be introduced an innovation by which all concerned would be exercised more thoroughly in the part they will be called upon to play in war. Under existing conditions, Indian units make their own arrangements for the supply of rations on manœuvres, a system which in war would be impossible.

The provision of the ammunition column would be the means of affording practice in that most desirable factor of efficiency—the distribution of ammunition in the field; and the enhanced balance of the training grant would also ensure that a plentiful supply of blank was available not only for cavalry and infantry, but also, most important, for artillery. In short, from whatever standpoint we view the situation, we cannot get away from the fact that *money* is the governing factor. Had we an unlimited grant at our disposal, we could evolve many schemes and offer many suggestions of practical value by the adoption of which the unrealities of manœuvres might be reduced to a minimum; but, unfortunately, there is no such phrase as *carte blanche* in the lexicon of the soldier, so, rather than advocate expensive innovations, we must perforce confine our efforts to the improvement of the existing state of affairs. Nor, by so doing, need progress be retarded if all ranks from the highest to the lowest throw themselves whole heartedly, patriotically, and intelligently into the spirit of manœuvres. Whether manœuvres are a drudgery or an interesting exercise, a bore or a pleasure, depends entirely upon the manner in which they are conceived by the General Staff and upon the spirit in which they are received by individuals.

On manœuvres our medical arrangements are sadly lacking the realism of war and, at times, these services are not even organized on a scale sufficient to deal adequately with ordinary cases of sickness. Regiments, for instance, are equipped with only their own normal arrangements, which are merely intended for (1) first aid during an engagement and (2) the treatment of cases who can still do duty. In war, each brigade has a field hospital, both British and Indian. On manœuvres, two sections of each would probably be sufficient, but they should be equipped with personnel and ambulance transport on the scale laid down in the Field Service Manual,

Medical. As these field hospitals are mobile and accompany the brigade, it is important that they should be constantly cleared. This is where the manœuvre scale falls short of requirements. A base hospital is necessary, which should be established either in the nearest cantonment, or under canvas at some suitable point. Lines of communication must exist between this point and the various field hospitals, at each march along which temporary hospitals may have to be located, each in charge of a subordinate and each equipped with sufficient ambulance transport of all kinds.

Briefly the two points which require the greatest attention are, firstly, that field hospitals should be strong enough to take part in manœuvres in the field, and, secondly, the establishment of lines of communication, along which the serious cases may be passed to the base.

It is satisfactory to note that the formation of an Army Bearer Corps reserve has recently been sanctioned, by means of which a much needed increase in medical personnel will be obtained, and a great difficulty removed.

The consideration of Red Cross arrangements leads us logically to think of the wounded, and so to the system at present in force in our army by which we can best measure the effect of an enemy's fire on our ranks. This is conveyed in two ways—by individual casualties and what might be called collective or wholesale casualties. Of these, the latter are signified by an arrangement of casualty screens, of which each section of infantry carries one. This method, although not a new one, has been selected after careful thought and experiments, so may therefore be considered the best and susceptible of no improvement. There are, however, no rules promulgated for the guidance of individual casualties, so it would be well here to lay stress on the importance of putting subordinate commanders out of action for the time being, in order that their juniors may be trained in peace time for the parts they will be called upon to play in war.

Nor should these opportunities for the application of first aid be neglected, but in each case the dressing should be properly applied to a supposed wound and (in savage warfare at least) the casualty carried to the dressing station by some device such as slings, net, pagri, etc., in which each unit should receive instruction from its medical officer. At the dressing station, the medical officer should criticise the manner in which the dressing has been applied. In civilised warfare, the wounded are left where they fall in the firing line, but are collected by trained stretcher bearers following in rear, a system which is too often neglected on manœuvres and one which demands practice in peace time to avoid confusion and unnecessary suffering in war.

The British army, more than any other, is peculiarly handicapped in not knowing the conditions we shall have to face in our next war. Accordingly we can have no sealed pattern on which to mould our manœuvres in peace time. We may be called upon to

operate in a wooded country such as enclosed the battlefields of the Metz campaign, or it may be a glaxis-like slope such as characterised the fighting round Plevna, or a mountainous country like our own north-west frontier of India. So it behoves us to be prepared for every class of fighting by rehearsing each on manœuvres and avoiding normal formations. But the fact must never be lost sight of that in whatever theatre of war we may find ourselves, the ideal positions for attack and defence are as rare as the four-leaved shamrock.

#### SUMMARY.

In order to sum up the suggestions offered above, it will be necessary to recapitulate the causes which combine to rob manœuvres of their likeness to war.

*Firstly.*—We have seen that it is largely in the power of individual officers to see that unreal situations do not arise. To enable them to fit themselves for the exercise of these powers, it should be remembered that in soldiering there is more to be learnt from the studies of great campaigns than from the lessons of the manœuvre ground. When troops on service find themselves under conditions with which their peace training has done nothing to familiarise them, a cry is raised against the text-books. But these latter were never intended to be an exhaustive tactical treatise: they rather lay down general rules and broad principles for guidance, and the secret of their interpretation lies in the resource and initiative of the officer.

*Secondly.*—The value of information as to the enemy's movements is often ignored even in war, so how much more must this be the case in peace? Now it is not only a common mistake to receive information and then not turn it to good account, but more often sufficient efforts are not made to discover the enemy's whereabouts and guard against a possible surprise. For instance, Kuropatkin's position at Mukden was bristling with telephones. He received much information, yet Nogi's turning movement was a complete surprise to him.

*Thirdly.*—The question of umpires. It is not perhaps overstating the case to say the essence of successful manœuvres is a good system of umpiring, for inasmuch as the umpires represent the moral and physical forces by which one body of men obtain the ascendancy over another, if the effect of these forces is improperly allowed for by the umpire staff, a false picture of warfare is presented and false lessons are learnt, from what otherwise might have been instructive manœuvres. Umpires as far as possible take the place of the impressions and influences of war which are wanting in peace. They should avoid useless and premature decision; the main thing is to come to a quick decision, and this is better than a long examination of the circumstances, which only causes a waste of time.

*Fourthly.*—We are faced with the problem of how to dispose of bodies of troops which have been ruled out of action. It is desirable

that they should become the means at the disposal of the director to modify a situation or influence the decisions of leaders of sides. For it is of importance to make victory alternate between the two parties, so that all in turn may practice attack and defence, pursuit and retreat, etc., which would not be possible if both remained of equal strength throughout. Besides, uncertainty as to the strength of the adversary brings a further warlike element into the operations.

*Fifthly.*—Operations must be continuous in order to portray the conditions of modern battle, and admit of complete co-operation, which is the full development of the force inherent in each arm at the right place and the right time. This is not compatible with frequent suspensions.

*Sixthly.*—In deciding upon the effect of fire, the range, judging of distance, size of the object, intensity, and duration of fire, fire discipline, *moral*, and the probable effect of the enemy's fire must all be taken into consideration.

*Seventhly.*—Manœuvres on a large scale should be fewer and further between, to admit of transport being borrowed from neighbouring commands and training grants being bolstered up until such a balance is shown as can provide all the properties of war.

*Eighthly.*—Supply should be organized and rations issued on the same system as obtains in war. *En passant* it may be noted that troops receive free rations on active service, but not on manœuvres.

*Ninthly.*—There exists much room for improvement in the treatment of casualties and the organization of the medical services. History warns us that in our next war, casualties will be greater than they have ever been before. Will the supply be equal to the demand?

*Tenthly.*—With regard to the theatre of war: in England, the rights and interests of private persons play a large part in the selection of a manœuvre ground. All foreign armies rejoice in the power of being able to move freely everywhere; the only prohibitions are, in general, that houses and the enclosures round them, gardens, parks, young plantations, tobacco fields, vineyards, hop gardens, and the like, are never to be entered by troops.

*Finally.*—The key to success on the battlefield is habit, the habit of using the wits, of subordinating the rules of theory to the needs of the moment. It is undeniably the case that when a conflict is imminent, the average officer or man will act as he has learnt on manœuvres, so the duty of all is to ensure that unreal situations do not arise. We are told that it is not in mortals to *command* success, but let us do more, let us *deserve* it, by ourselves acting on manœuvres in precisely the same manner as we should in war.



## BUSH WARFARE IN WEST AFRICA.

BY BREVET-COLONEL C. H. P. CARTER, C.M.G., THE CAMERONIANS  
(SCOTTISH RIFLES).

**[Compiled from a lecture delivered at Ranikhet and from notes  
written for the Gold Coast Regiment.]**

The brief eleven pages devoted by the authorities to Bush Fighting in the Field Service Regulations, Part I, gives to the inexperienced a somewhat poor insight into the many varying conditions of bush warfare which the British officer may meet with in different parts of the globe.

It is impossible to go into the details regarding the tactics of the various bush races; all over the world within the last decade we have been engaged in active bush operations, in Burma, Somaliland East and West Africa, and it is purely in regard to warfare in the latter place that the following article is written.

Our various colonies in West Africa, from Sierra Leone to the Niger Delta in the Bight of Benin, are one and all fringed from their coast-line 200 to 350 miles inland with a large forest belt, varying in density. In parts of Southern Nigeria, especially so in the Benin country, and also in Ashanti, the forest is virtually impenetrable; as an example of the difficulties of movement in the same, I would quote the punitive expedition to Benin City in 1897, under Admiral Sir Harry Rawson, K.C.B. The objective was only 26 miles distant from Ologbo, the landing place on the Ologi Creek (an affluent of the Benin river). The force employed was composed of 300 Hausas and 600 bluejackets and marines, and the only means of communication was a narrow winding track, in parts scarcely a foot wide, by which the column had to advance in single file. It will hardly be credited when I state that it took seven days for this force (which was eventually divided into two columns, an advanced fighting one, and a supporting one moving some four to five miles in rear) to march these 26 miles, being at the rate of less than four miles per diem. The fighting column was considerably delayed on account of "sniping," which was actively kept up by the enemy from side paths (previously cleared, running parallel to the main track, and fifteen to twenty yards from the same), the density of the tropical undergrowth being so great that the enemy could creep close up and select their victim without being perceived. Luckily the scouts discovered these ambush paths, and, many casualties having occurred, the advanced guard, commanded by Colonel (now Lieut.-General) Bruce Hamilton, was ordered to furnish parties to enlarge these side paths, and thus to enable flanking parties to march along them.



all arms, an unsatisfactory state of affairs which is the most marked in the case of artillery. This is a question which will be touched upon *infra*, in connection with distribution of ammunition in the field and the organization of ammunition columns. It is hard to find a practical remedy for the third difficulty, except perhaps in the case of artillery, the direction of whose fire might be invariably represented by the beam of light from the coloured glass of a heliograph. But even this solution is an unsatisfactory one, and until some method is devised by means of which it will at once become apparent to a body of troops that they have come under rifle, maxim gun, or artillery fire from a certain direction, the character of manœuvres can never take the form of war. With artillery using indirect fire, it is quite impossible for troops under their fire to be aware of the fact, and they should, if possible, be informed by an umpire in the event of no other means being adopted. The system of artillery firing one, two, or three guns respectively to denote the arm of the service upon which they were firing was condemned many years ago—the greatest objection to its practice being that it knocked the bottom out of artillery discipline.

The absence of all necessity for such a device in night operations enhances the value of such exercises, for here the shades of night envelop movements almost as effectually as the fog of war, and the conditions which obtain approximate far more closely to service conditions. In this class of operation, which usually partakes of the nature of a surprise, we can tell whether, as such, in real war it would have achieved success or been doomed to failure. Their peculiar properties being thus realised, night operations should be more frequently carried out during manœuvres, and more especially in this country where greater facilities exist. In order to lend greater realism to their effect, operations should be continuous night and day—a state of affairs which only bears out what has been said above, that any unnecessary suspension of hostilities is undesirable and to be deprecated.

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present time, however, the fire discipline of the West African Frontier Force is on a far higher level.

At the action of Dompoussi in 1900 (25 miles from Kumasi), 400 men expended 40,000 rounds of ammunition in two hours; the force was seriously engaged by some thousands of Ashantis, occupying a series of strong stockades erected in echelon, covering half a mile of country; and under the very trying circumstances of this fight, which entailed casualties with the column amounting to eight officers out of nine, and ninety-eight rank and file, you can imagine how extremely difficult it was to maintain, with these native troops any effective fire control.

The question of waste of ammunition is one of the most serious things that a commander has to take into consideration in organising an expeditionary force in West Africa, and it is for this reason I contend that one officer or British N.-C. O. is required for every twenty-five men.

Sir Garnet Wolseley in his despatch after the first brush with the Ashantis in the 1874 campaign stated:—

“One point stands forward prominently from the experience of this day, *viz.*, that for fighting in the African bush a very exceptionally large proportion of officers is required. Owing to the dense cover an officer can only exercise control over the men close to him, and for this kind of work there should be at least one officer to every twenty men.”

In the Benin City Expedition the practice was resorted to of using “clearing volleys” by alternate ha sections of the advanced guard, told off for that purpose, who fired obliquely at intervals to the front. These precautionary volleys had the desired effect of hurrying the fire of the enemy who, unable to bear the tension any longer, usually opened a fusillade at distances from which their gas-pipe type of weapons were useless, and in more than one case this premature fire revealed the presence of an ambush. The use of these “searching volleys” has, however, been abandoned, as the expenditure of ammunition was much too costly for the small benefits derived.

With the large and effective force of native troops which we now have in West Africa to look after our interests, *viz.*, 7,000 men, designated the “West African Frontier Force,” one must bear in mind that for the last fifteen years we have been discharging a great number of time-expired soldiers annually, who are now scattered throughout the land, and who have naturally revealed to their countrymen all they learned of the art of war from their white commanders. Stockades were unknown in Ashanti until after the 1896 expedition, when Major (now Lieut.-General) Baden-Powell showed the native levies attached to the field force how to erect them; but since then the Ashantis have duly profited by this object lesson, and have recognised the value of building several stockades supporting one another in echelon, which necessitate a wide turning movement to manœuvre the defenders out of them, an extremely difficult operation in thick bush.

**Medical.** As these field hospitals are mobile and accompany the brigade, it is important that they should be constantly cleared. This is where the manœuvre scale falls short of requirements. A base hospital is necessary, which should be established either in the nearest cantonment, or under canvas at some suitable point. Lines of communication must exist between this point and the various field hospitals, at each march along which temporary hospitals may have to be located, each in charge of a subordinate and each equipped with sufficient ambulance transport of all kinds.

Briefly the two points which require the greatest attention are, firstly, that field hospitals should be strong enough to take part in manœuvres in the field, and, secondly, the establishment of lines of communication, along which the serious cases may be passed to the base.

It is satisfactory to note that the formation of an Army Bearer Corps reserve has recently been sanctioned, by means of which a much needed increase in medical personnel will be obtained, and a great difficulty removed.

The consideration of Red Cross arrangements leads us logically to think of the wounded, and so to the system at present in force in our army by which we can best measure the effect of an enemy's fire on our ranks. This is conveyed in two ways—by individual casualties and what might be called collective or wholesale casualties. Of these, the latter are signified by an arrangement of casualty screens, of which each section of infantry carries one. This method, although not a new one, has been selected after careful thought and experiments, so may therefore be considered the best and susceptible of no improvement. There are, however, no rules promulgated for the guidance of individual casualties, so it would be well here to lay stress on the importance of putting subordinate commanders out of action for the time being, in order that their juniors may be trained in peace time for the parts they will be called upon to play in war.

Nor should these opportunities for the application of first aid be neglected, but in each case the dressing should be properly applied to a supposed wound and (in savage warfare at least) the casualty carried to the dressing station by some device such as slings, net, pagri, etc., in which each unit should receive instruction from its medical officer. At the dressing station, the medical officer should criticise the manner in which the dressing has been applied. In civilised warfare, the wounded are left where they fall in the firing line, but are collected by trained stretcher bearers following in rear, a system which is too often neglected on manœuvres and one which demands practice in peace time to avoid confusion and unnecessary suffering in war.

The British army, more than any other, is peculiarly handicapped in not knowing the conditions we shall have to face in our next war. Accordingly we can have no sealed pattern on which to mould our manœuvres in peace time. We may be called upon to

operate in a wooded country such as enclosed the battlefields of the Metz campaign, or it may be a glaxis-like slope such as characterised the fighting round Plevna, or a mountainous country like our own north-west frontier of India. So it behoves us to be prepared for every class of fighting by rehearsing each on manœuvres and avoiding normal formations. But the fact must never be lost sight of that in whatever theatre of war we may find ourselves, the ideal positions for attack and defence are as rare as the four-leaved shamrock.

#### SUMMARY.

In order to sum up the suggestions offered above, it will be necessary to recapitulate the causes which combine to rob manœuvres of their likeness to war.

*Firstly.*—We have seen that it is largely in the power of individual officers to see that unreal situations do not arise. To enable them to fit themselves for the exercise of these powers, it should be remembered that in soldiering there is more to be learnt from the studies of great campaigns than from the lessons of the manœuvre ground. When troops on service find themselves under conditions with which their peace training has done nothing to familiarise them, a cry is raised against the text-books. But these latter were never intended to be an exhaustive tactical treatise: they rather lay down general rules and broad principles for guidance, and the secret of their interpretation lies in the resource and initiative of the officer.

*Secondly.*—The value of information as to the enemy's movements is often ignored even in war, so how much more must this be the case in peace? Now it is not only a common mistake to receive information and then not turn it to good account, but more often sufficient efforts are not made to discover the enemy's whereabouts and guard against a possible surprise. For instance, Kuropatkin's position at Mukden was bristling with telephones. He received much information, yet Nogi's turning movement was a complete surprise to him.

*Thirdly.*—The question of umpires. It is not perhaps overstating the case to say the essence of successful manœuvres is a good system of umpiring, for inasmuch as the umpires represent the moral and physical forces by which one body of men obtain the ascendancy over another, if the effect of these forces is improperly allowed for by the umpire staff, a false picture of warfare is presented and false lessons are learnt, from what otherwise might have been instructive manœuvres. Umpires as far as possible take the place of the impressions and influences of war which are wanting in peace. They should avoid useless and premature decision; the main thing is to come to a quick decision, and this is better than a long examination of the circumstances, which only causes a waste of time.

*Fourthly.*—We are faced with the problem of how to dispose of bodies of troops which have been ruled out of action. It is desirable

The commander who has some previous knowledge of the general characteristics and ways of the enemy he is to operate against will possess a powerful asset.

As a rule, it is extremely difficult to extract any reliable information from friendly natives concerning the habits and tactics likely to be employed by the enemy, especially if they live in an adjoining country, for they are afraid that it will leak out afterwards if they open their minds. They have to be very carefully interrogated, therefore, and even then the knowledge acquired requires a deal of sifting before anything pertaining to the truth can be elicited. Guides are also hard to obtain, and usually have to be threatened with dire penalties when acting as such. When guiding a column they should always have a special guard, to one of whom they should be secured by "tie-tie" (a strong native creeper), as otherwise they will most assuredly escape on the first opportunity. As an example of their unreliability, the following instance is quoted:—

With great difficulty a guide was obtained in Benin city in 1897, who promised, for a reward of £50, to reveal the hiding-place of a certain chief, called Ologbo Sheri, who was responsible for the Benin massacre of seven European officials and 200 natives accompanying them on a political mission to Benin city. To preserve secrecy, 50 Hausa soldiers in plain clothes moved out at various times during the day (with arms concealed) to a rendezvous outside the city. The actual march started about 10 o'clock that night. The forest was pitch dark, and to enable the men to see the way on a very difficult track, every sixth man was given a candle; this shows how still the forest is. The guide declared that the chief's hiding-place was only fifteen miles away and the object was to surround and rush his retreat at the first streak of dawn; but as it turned out, the troops did not arrive at their destination till 3 P.M. the next afternoon, and a very weary force they were by that time! It appears that the guide, frightened that his countrymen might eventually discover that he had acted as such, made a huge detour of 35 miles. Luckily, in the rough-and-tumble which took place in the village, the chief in question was badly wounded, and being afterwards identified (the guide had bolted on the first shot being fired), he was executed in Benin city.

The task of discovering the enemy, and reporting upon his dispositions, should nearly always be conducted with a fairly strong force in bush country, as it is generally necessary to draw his fire for this purpose. The great difficulty in thick bush is to break off this preliminary fight and retire to camp, and it is this retirement that the enemy always consider as a victory for themselves. It is indeed often the means of providing them with the necessary incentive to assume an offensive rôle.

For the Benin City Expedition, a corps of fifty scouts was specially raised. They were all time-expired Hausa soldiers, and were put through an elaborate course of training previous to

operate in a wooded country such as enclosed the battlefields of the Metz campaign, or it may be a glacier-like slope such as characterised the fighting round Plevna, or a mountainous country like our own north-west frontier of India. So it behoves us to be prepared for every class of fighting by rehearsing each on manœuvres and avoiding normal formations. But the fact must never be lost sight of that in whatever theatre of war we may find ourselves, the ideal positions for attack and defence are as rare as the four-leaved shamrock.

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that they should become the means at the disposal of the director to modify a situation or influence the decisions of leaders of sides. For it is of importance to make victory alternate between the two parties, so that all in turn may practice attack and defence, pursuit and retreat, etc., which would not be possible if both remained of equal strength throughout. Besides, uncertainty as to the strength of the adversary brings a further warlike element into the operations.

*Fifthly.*—Operations must be continuous in order to portray the conditions of modern battle, and admit of complete co-operation, which is the full development of the force inherent in each arm at the right place and the right time. This is not compatible with frequent suspensions.

*Sixthly.*—In deciding upon the effect of fire, the range, judging of distance, size of the object, intensity, and duration of fire, fire discipline, *moral*, and the probable effect of the enemy's fire must all be taken into consideration.

*Seventhly.*—Manœuvres on a large scale should be fewer and further between, to admit of transport being borrowed from neighbouring commands and training grants being bolstered up until such a balance is shown as can provide all the properties of war.

*Eighthly.*—Supply should be organized and rations issued on the same system as obtains in war. *En passant* it may be noted that troops receive free rations on active service, but not on manœuvres.

*Ninthly.*—There exists much room for improvement in the treatment of casualties and the organization of the medical services. History warns us that in our next war, casualties will be greater than they have ever been before. Will the supply be equal to the demand?

*Tenthly.*—With regard to the theatre of war: in England, the rights and interests of private persons play a large part in the selection of a manœuvre ground. All foreign armies rejoice in the power of being able to move freely everywhere; the only prohibitions are, in general, that houses and the enclosures round them, gardens, parks, young plantations, tobacco fields, vineyards, hop gardens, and the like, are never to be entered by troops.

*Finally.*—The key to success on the battlefield is habit, the habit of using the wits, of subordinating the rules of theory to the needs of the moment. It is undeniably the case that when a conflict is imminent, the average officer or man will act as he has learnt on manœuvres, so the duty of all is to ensure that unreal situations do not arise. We are told that it is not in mortals to *command* success, but let us do more, let us *deserve* it, by ourselves acting on manœuvres in precisely the same manner as we should in war.





## BUSH WARFARE IN WEST AFRICA.

BY BREVET-COLONEL C. H. P. CARTER, C.M.G., THE CAMERONIANS  
(SCOTTISH RIFLES).

**[Compiled from a lecture delivered at Ranikhet and from notes  
written for the Gold Coast Regiment.]**

The brief eleven pages devoted by the authorities to Bush Fighting in the Field Service Regulations, Part I, gives to the inexperienced a somewhat poor insight into the many varying conditions of bush warfare which the British officer may meet with in different parts of the globe.

It is impossible to go into the details regarding the tactics of the various bush races; all over the world within the last decade we have been engaged in active bush operations, in Burma, Somaliland East and West Africa, and it is purely in regard to warfare in the latter place that the following article is written.

Our various colonies in West Africa, from Sierra Leone to the Niger Delta in the Bight of Benin, are one and all fringed from their coast-line 200 to 350 miles inland with a large forest belt, varying in density. In parts of Southern Nigeria, especially so in the Benin country, and also in Ashanti, the forest is virtually impenetrable; as an example of the difficulties of movement in the same, I would quote the punitive expedition to Benin City in 1897, under Admiral Sir Harry Rawson, K.C.B. The objective was only 26 miles distant from Ologbo, the landing place on the Ologi Creek (an affluent of the Benin river). The force employed was composed of 300 Hausas and 600 bluejackets and marines, and the only means of communication was a narrow winding track, in parts scarcely a foot wide, by which the column had to advance in single file. It will hardly be credited when I state that it took seven days for this force (which was eventually divided into two columns, an advanced fighting one, and a supporting one moving some four to five miles in rear) to march these 26 miles, being at the rate of less than four miles per diem. The fighting column was considerably delayed on account of "sniping," which was actively kept up by the enemy from side paths (previously cleared, running parallel to the main track, and fifteen to twenty yards from the same), the density of the tropical undergrowth being so great that the enemy could creep close up and select their victim without being perceived. Luckily the scouts discovered these ambush paths, and, many casualties having occurred, the advanced guard, commanded by Colonel (now Lieut.-General) Bruce Hamilton, was ordered to furnish parties to enlarge these side paths, and thus to enable flanking parties to march along them.

To be detailed for this flank duty was eagerly sought after, as a rough-and-tumble scrap with the Benish was invariably experienced. The forest was so thick in this particular country that the sun's rays failed to filter through the foliage of the trees, and one could consequently march without a helmet.

Marching silently along this narrow winding track in Indian file, with the impenetrable bush brushing one's body on either side and the huge cotton trees blotting out the sun, made the stoutest heart quake when one suddenly saw a comrade fall in his tracks, and the loud explosion of a "long dane" (as a native gun is called) announced the proximity of snipers.

It was usually useless to retaliate, as the sniper always had (as it was discovered afterwards) a rifle-pit handy, into which he sank, while scores of bullets flew harmlessly over his head.

The only survivors of the Benin massacre were Captain Boissragon and Vice-Consul Locke, and these officers actually took five days to crawl sixteen miles through the tangled undergrowth to another affluent of the Benin river, where luckily they met with a friendly native of another tribe, who hid them in a canoe and bore them to safety. Their sufferings in the bush without food and drink were beyond description; they naturally had to avoid the neighbourhood of villages where water was, and could only relieve their parched lips with the dew collected from leaves in the early morning.

An even more difficult and trying country to operate in than this forest belt is the Niger delta in Southern Nigeria, which is a net-work of hundreds of creeks and small waterways. It was formerly occupied by some truculent tribes, who gave the Government an infinite amount of trouble to suppress. Those who took part in the Brass and Brohemie expeditions under Admiral Bedford in 1894-95 will never forget the difficulties they had to contend with, not only by water, but when accompanying landing parties who usually had to wade through miles of slimy mang swamps, to surround some chief's stronghold.

Once the forest belt of West Africa is left behind, the country is invariably of an open, undulating type, dotted with trees and covered with waving grass, which in the rains grows to some five to eight feet high, and restricts the view.

The weather plays an important part in bush warfare. It was for this reason that the Ashantis revolted in 1900 during the rains, and in consequence operations in the early part of that campaign were conducted under very trying circumstances.

The West African warriors avoid, whenever possible, a serious engagement, and have a strong preference for attacking isolated parties. After an unsuccessful assault they disperse with extraordinary rapidity, which renders pursuit futile in thick bush. They are always on the alert to seize any opportunity which may arise. Cunning is their chief characteristic, and no one knows better how to make use of it in war.

The moral is, never relax vigilance on any possible occasion; more regrettable incidents and disasters have occurred in West Africa from that cause than from any other. Always be prepared for sudden and unexpected developments, and if the native soldiers under you have confidence in you as their leader, you need have little fear for the final issue.

Now, operations against bush tribes are carried out on somewhat different lines to those of regular warfare, and the methods of conducting the same in West Africa have undergone a considerable change for the better in the last decade.

Previous to the Ashanti campaign of 1900 there is no doubt that, to save delay, columns very often moved in a hostile country without taking the ordinary precautions, such as putting out scouts and flankers in thick bush, piqueting defiles, etc. As the rate of progress through the dense primeval forest, when these precautions *are* taken, is at the rate of about one mile per hour, and often less, the officer commanding was often inclined at times, we will say, to "chance it," and to signal on his whistle four sharp blasts, denoting "In scouts and flankers." Especially was this the case when the column had marched for some miles without encountering any signs of the enemy. But woe betide him if he was beguiled into doing this, for he was more than likely to be rudely awakened by the sudden roar (intensified in the deadly stillness of the forest) of hundreds of "long danes," denoting the dreaded ambush. It, however, remains to be said that there are certain times when, for strategic reasons, columns must push on more rapidly, and on these occasions a commander must exercise his judgment with regard to the density of the bush, and the physical features of the country he is marching through, whether or not he considers it necessary to move with full precautions. But on all occasions, in thick bush, columns should invariably have, in addition to the "point," a small screen of scouts covering their front, who should work in pairs, extended fifteen to twenty yards apart, one man (with rifle slung) using his "matchet" (a sort of *kukri*) to clear away through the undergrowth, and the other with his rifle ready for immediate action.

The great thing is to act with vigour. The moment the enemy opens fire the nearest body of troops should promptly fix bayonets and charge the place where the hostile fire originated from, but the officer or N.-C. O. in command of the party must be careful not to allow the men to rush too far into the bush, otherwise hopeless confusion will ensue, and they will mask the fire of other portions of their own force if the action becomes general. In the old form of bush fighting the path one was moving on was seldom quitted, the prevalent idea being that control of one's men would be completely lost if they were launched into the bush. When attacked, the men were accustomed to close up and lie down on both sides of the road, and then they expended ammunition at a truly heart-breaking rate, with very indifferent results; and usually nothing but a stout stick used with considerable force would make them cease fire. At the

present time, however, the fire discipline of the West African Frontier Force is on a far higher level.

At the action of Dompouassi in 1900 (25 miles from Kumasi), 400 men expended 40,000 rounds of ammunition in two hours; the force was seriously engaged by some thousands of Ashantis, occupying a series of strong stockades erected in echelon, covering half a mile of country; and under the very trying circumstances of this fight, which entailed casualties with the column amounting to eight officers out of nine, and ninety-eight rank and file, you can imagine how extremely difficult it was to maintain, with these native troops any effective fire control.

The question of waste of ammunition is one of the most serious things that a commander has to take into consideration in organising an expeditionary force in West Africa, and it is for this reason I contend that one officer or British N.-C. O. is required for every twenty-five men.

Sir Garnet Wolseley in his despatch after the first brush with the Ashantis in the 1874 campaign stated :—

“One point stands forward prominently from the experience of this day, *viz.*, that for fighting in the African bush a very exceptionally large proportion of officers is required. Owing to the dense cover an officer can only exercise control over the men close to him, and for this kind of work there should be at least one officer to every twenty men.”

In the Benin City Expedition the practice was resorted to of using “clearing volleys” by alternate ha sections of the advanced guard, told off for that purpose, who fired obliquely at intervals to the front. These precautionary volleys had the desired effect of hurrying the fire of the enemy who, unable to bear the tension any longer, usually opened a fusillade at distances from which their gas-pipe type of weapons were useless, and in more than one case this premature fire revealed the presence of an ambush. The use of these “searching volleys” has, however, been abandoned, as the expenditure of ammunition was much too costly for the small benefits derived.

With the large and effective force of native troops which we now have in West Africa to look after our interests, *viz.*, 7,000 men, designated the “West African Frontier Force,” one must bear in mind that for the last fifteen years we have been discharging a great number of time-expired soldiers annually, who are now scattered throughout the land, and who have naturally revealed to their countrymen all they learned of the art of war from their white commanders. Stockades were unknown in Ashanti until after the 1896 expedition, when Major (now Lieut.-General) Baden-Powell showed the native levies attached to the field force how to erect them; but since then the Ashantis have duly profited by this object lesson, and have recognised the value of building several stockades supporting one another in echelon, which necessitate a wide turning movement to manœuvre the defenders out of them, an extremely difficult operation in thick bush.

Even as far back as in 1899, in the Qua Ibibio Expedition in Southern Nigeria, the enemy made use of fire trenches; but I can remember one occasion when they failed to make proper use of the cover they had prepared. On this occasion, as soon as they saw our force extending for the attack from the edge of a wood at about 800 yards from their position, they one and all leaped on to the parapet of their trenches, beating tom-toms, and waving defiance with their guns and spears. A lucky shrapnel from a 7-pounder bagged twenty-three of them, and their war dance ended abruptly.

During the Aro Expedition in Southern Nigeria in 1901-02, the enemy made constant use of trenches, which were constructed on the most approved principles, admirably concealed and skilfully selected, which shows that in future operations in West Africa we must be careful not to underrate our foe.

During 1908, when another Ashanti rising was hourly expected, and movable columns in various parts of the country were straining at their leashes, a message was received from a friendly "War Chief" who had loyally supported the Government in the 1900 insurrection, saying that he was convinced stockades would not be used in the next war, but that the Ashantis would adopt tactics more in accordance with the white man's ideas. This follows out my theory that our next engagement with the Ashantis will be no walk-over, and there is no doubt that they are infinitely better armed at the present time than they were when contending against Sir James Willcocks' force in 1900. The boundaries of Ashanti are ideal ones for gun-runners, and with the small preventive service at the disposal of the Gold Coast Government, it is virtually impossible to prevent arms being smuggled across the borders. French and German traders have no doubt made handsome profits out of this illicit trade.

Many and varied are the ruses which the enemy devise to outwit the white man. At bends of forest tracks they invariably have "lookouts," perched high up in the trees, who signal the advance to their comrades. In Southern Nigeria "pitfalls," were constantly resorted to, which were pits dug in the path you were expected by, eight feet deep with pointed wooden stakes at the bottom, the top being covered with a lattice-work of light sticks, and leaves with earth placed over the same. These were impossible to detect. On one occasion a native officer fell down one of these, and was trussed like a chicken. Great difficulty was experienced in disengaging his body, but he ultimately recovered.

When attacking a village one should be careful not to be lured down a false path (cut for the purpose), ending generally in a blind alley and an ambush.

In stockade fighting the Ashantis usually placed selected good shots, high up in trees in the vicinity, to pick off the white officers, and in one action a man thus posted was reported to have secured a heavy bag of eight officers, but luckily he was eventually discovered and shot.

Another device of the natives in Southern Nigeria was to defend a village with only a skeleton force. After its capture the troops would probably advance, elated with their success (and in earlier days, burdened with sundry loot). Thinking active operations over for the day, the usual precautions would probably be relaxed, when suddenly, a few miles on, a roar of musketry from the surrounding bush, resulting in numerous casualties, would proclaim the fact that the real fight of the day had only then commenced.

The tactics mentioned above are applicable only to those tribes who live in the forest belt. As before stated, on quitting this belt, the country is open and undulating. The inhabitants in these parts go in more for shock tactics, basing their operations generally on walled towns, which they fall back on and defend to the last. These walls are made of puddled clay, often thirty to forty feet in height and ten to twelve feet in breadth. The 75 millimetre Q.-F. guns now in use with the West African Frontier Force made little or no impression on these hardened walls.

In these districts the enemy, especially in the northern part of Northern Nigeria, are mostly mounted, and armed with fire-arms, spears, and swords.

In the Munshi country on the river Benue, dividing Northern and Southern Nigeria, which is chiefly rocky bush, the natives are armed with bows and poisoned arrows, and to be wounded means a quick demise, as the poison used is of the deadliest description, and is stated to be made from decayed human flesh.

The formation usually adopted for moving in the presence of the enemy in this open country is either in the "rigid" form of a square, or the "elastic" one.

In the Bida and Ilorin Expedition of 1896, the advance was carried out in a rigid square formation.\* The force comprised 30 Europeans, and 600 troops of the Royal Niger Company, and two 12-pounder Whitworth B.-L. guns were taken with the view of breaching the walls of Bida. These heavy guns delayed the column enormously.

Another formation used is known as the "elastic square." This formation has the great advantage that when an attack is expected from any quarter the various portions of the force are able to repel the enemy, without causing confusion to the remainder. An elastic square is merely composed of an advanced guard, right and left flank guards, and a rear guard, all moving in fairly close proximity, and ready to close in on one another if a general attack takes place. All ammunition carriers, supplies, etc., and bearer company, are in the centre. In Northern Nigeria, mounted infantry are utilised as a screen.

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\* *Distribution for rigid square*—Front face—one company.

Side faces—two companies each.

Rear face—one company.

One company in reserve in centre, and carriers in two parties inside the square.

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It was usually useless to retaliate, as the sniper always had, as it was discovered afterwards, a rifle put fairly into which he sunk, while scores of bullets flew harmlessly over his head.

The only survivors of the Benish massacre were Captain Bassegon and Vice-Governor Lase, and these officers actually took five days to crawl sixteen miles through the tangled undergrowth to another affluent of the Benue river, where luckily they met with a friendly native of another tribe, who had them in a canoe and bore them to safety. Their sufferings in the bush without food and drink were beyond description; they naturally had to avoid the neighbourhood of villages where water was, and could only receive their parched lips with the few collected from leaves in the early morning.

An even more difficult and trying country to operate in than this forest belt is the Niger delta in Southern Nigeria, which is a network of hundreds of creeks and small waterways. It was formerly occupied by some nomadic tribes, who gave the Government an intricate and difficult job to suppress. Those who took part in the Brass and Brabrand expeditions under Admiral Balfour in 1894-95 will never forget the difficulties they had to contend with, not only by water, but when attempting to bring parties who usually had to wade through miles of swampy mangroves, to surround some chief's stronghold.

Once the forest belt of West Africa is left behind, the country is invariably of an open, unbroken type, dotted with trees and covered with waving grass, which in the rainy season is so high that light footed natives can leap over it.

The weather plays an important part in this section. It was for this reason that the Africans were deterred from doing the work, and in consequence the British were the only part of that campaign who were able to do any work in the country.

The West African warriors are not so expert as the Asiatics in engagements, and have a strong tendency to retreating as a tactical policy. After the first day's work they are content with extra-ordinary rapacity, but are not so persistent in the thick bush. They are always willing to take a day's rest, and they will never arise. Channing is the only European who has been so lucky as to know how to make use of it in war.

The moral is, never relax vigilance on any possible occasion: more regrettable incidents and disasters have occurred in West Africa from that cause than from any other. Always be prepared for sudden and unexpected developments, and if the native soldiers under you have confidence in you as their leader, you need have little fear for the final issue.

Now, operations against bush tribes are carried out on somewhat different lines to those of regular warfare, and the methods of conducting the same in West Africa have undergone a considerable change for the better in the last decade.

Previous to the Ashanti campaign of 1900 there is no doubt that, to save delay, columns very often moved in a hostile country without taking the ordinary precautions, such as putting out scouts and flankers in thick bush, piqueting defiles, etc. As the rate of progress through the dense primeval forest, when these precautions *are* taken, is at the rate of about one mile per hour, and often less, the officer commanding was often inclined at times, we will say, to "chance it," and to signal on his whistle four sharp blasts, denoting "In scouts and flankers." Especially was this the case when the column had marched for some miles without encountering any signs of the enemy. But woe betide him if he was beguiled into doing this, for he was more than likely to be rudely awakened by the sudden roar (intensified in the deadly stillness of the forest) of hundreds of "long dances," denoting the dreaded ambush. It, however, remains to be said that there are certain times when, for strategic reasons, columns must push on more rapidly, and on these occasions a commander must exercise his judgment with regard to the density of the bush, and the physical features of the country he is marching through, whether or not he considers it necessary to move with full precautions. But on all occasions, in thick bush, columns should invariably have, in addition to the "point," a small screen of scouts covering their front, who should work in pairs, extended fifteen to twenty yards apart, one man (with rifle slung) using his "matchet" (a sort of *kukri*) to clear away through the undergrowth, and the other with his rifle ready for immediate action.

The great thing is to act with vigour. The moment the enemy opens fire the nearest body of troops should promptly fix bayonets and charge the place where the hostile fire originated from, but the officer or N.-C. O. in command of the party must be careful not to allow the men to rush too far into the bush, otherwise hopeless confusion will ensue, and they will mask the fire of other portions of their own force if the action becomes general. In the old form of bush fighting the path one was moving on was seldom quitted, the prevalent idea being that control of one's men would be completely lost if they were launched into the bush. When attacked, the men were accustomed to close up and lie down on both sides of the road, and then they expended ammunition at a truly heart-breaking rate, with very indifferent results; and usually nothing but a stout stick used with considerable force would make them cease fire. At the

operations taking place. They were commanded by two specially selected officers.

These scouts did extremely good work, and on account of their dangerous and arduous task received a high rate of pay. Once they had located the enemy, which they rarely failed to do, their duties for the time were over, and they were instructed to lie down and let the advanced guard pass over them.

Certain tribes in West Africa are much better adapted to scouting than others. Mendis and Timinis from the Sierra Leone hinterland are undoubtedly the best scouts. They are small, wiry, intelligent little men of the Gurkha type, and they are ideal bushmen, well versed in woodcraft, and can move through the bush (even at night) virtually without sound, which is all-important.

Each company in the West African Frontier Force has its percentage of trained scouts and, in addition, most corps have some 25 specially selected regimental scouts, who are looked upon by their comrades with envy, as they wear a special badge of honour.

A column of from 400 to 500 fighting men, with two 2.95 Q.-F. mountain guns, and three machine guns, is the most compact and suitable force to be employed in bush warfare.

If it is necessary to concentrate a larger force at a certain point for punitive purposes, it will, as a rule, be better to advance in two small columns by different routes (if possible), and independently of one another, than in one large column.

In the bush, and especially in hilly country, it is not easy to find, and prepare, sufficient camping space for a large force, and for fighting purposes it would be too unwieldy, and would be hampered by its long baggage train.

It is a good principle for the advanced guard to halt five or ten minutes in every hour, to rest carriers, and to allow various units to close up to the front. If this is not done, the rear of the column would always be doubling, and striving to make up lost ground, and weak carriers would fail to carry their loads; besides, the column would be weakened by undue lengthening out.

A well-trained advanced guard commander should, after passing an obstacle (such as a fallen tree), slow down his pace considerably until he thinks the rear has closed up.

The following system has been tried with success:—

Each company commander should tell off an intelligent N.-C.O. to remain in rear of his company, whose duty should be to warn his officer whenever he loses sight of the unit following him. By this means the weakest link in the chain of the column would automatically bring back to it any part of the column which is inclined to go too fast.

The warning to the officer commanding each unit should be passed up to him through the ranks, and each man should drop back towards the N.-C. O. at the same time as he passes the warning to the man in front of him.

The above system requires drill and practice to be a success. It also militates against another evil which is most prevalent in the march of a column, *viz.*, when the latter is halted too frequently to allow the rear to close up, and units thus become jammed up, and when the "Advance" is again sounded, the column has to open out like a concertina before the rear guard gets started, and consequently a considerable time is wasted.

Silence has a great moral effect upon savages, and it should be enforced at all times on the march, and specially so when attacking at dawn. Only when charging should the men be allowed to give vent to their feelings.

The camp should be silently awakened at least one hour before daybreak, and all baggage, etc., packed by a portion of the troops, while the remainder fall in upon their "alarm posts" in readiness to withstand an attack at dawn. The advanced guard should move off as soon as it is light enough to see into the bush; they will proceed on the path as far as the length of the column entails, halt, place out double sentries from each section right and left in the bush, and send a patrol a short way up the road; at the same time the rear guard for the day will post sentries round the rear and flanks of the camp, and will only withdraw them when the camp is clear.

The officer commanding rear guard will then pass up the word "Camp clear, advance," and the column will move silently off.

The duty of covering the movement out of the camp by the rear guard requires great unity of execution, and the greatest vigilance is required on its part; during the confusion of marching out of camp a splendid opportunity arrives for an active foe to harass the column.

Bugle calls should not be employed, except during a fight, for an alarm, or for assembly after a fight. In camp the "Alarm" should never be sounded at night unless it is absolutely unavoidable, but troops should be aroused and fall in as silently as possible on their alarm posts and await orders.

Night operations on a large scale in the bush are not recommended. If deemed essential in any particular case, the operation should be carried out by as small a party as possible. The country should be carefully reconnoitred by day, and, if practicable, by the same men who are to carry out the project.

The organization of the carrier transport is one of the most important things the commander of a field force has to see to. In large expeditions carriers are formed into battalions, or "groups," each of 1,000 men belonging to one tribe. Each "group" should be under the command of a British officer, and he should have a proper proportion of N.-C. O.'s to assist him. Each "group" comprises 10 companies, each under a native "captain," and each company is made up of five gangs of about 20 men, each gang being under a "headman."

Every group will have a distinctive letter, or number and badge; a coloured band with buckle worn round the arm is the best.

With regard to native levies, from my own personal experience of them I do not consider they are of much value to a commander; they are in reality more often a handicap. Levies have been used on many occasions, notably so in the various Ashanti campaigns. In 1873 some 1,500 Akims were sent by Lord Wolseley, under British officers, to operate in the country to the east of the main advance, and they fled at the first approach of an Ashanti warrior. Sir James Willcocks employed 4,000 levies for a similar purpose in 1900, with exactly the same results. But when employed strategically on a flank in this way, especially if thereby the enemy's line of retreat is threatened, they assist the general advance by compelling the enemy to detach a force to intercept them.

In conclusion, there is one golden rule to follow in fighting badly armed savages in the bush, and that is—

Don't give your enemy any leisure to reload his gun, but keep him on the move, and press home your attack with the bayonet.

A few words with reference to the West African Frontier Force may be of interest.

Its composition at the present time is as follows:—

#### THE NORTHERN NIGERIA REGIMENT.

- 1 Battery of Artillery.
- 1 Battalion of Mounted Infantry.
- 2 Battalions of Infantry.
- Chiefly Fullanis, Hausas and Yorubas.

#### THE SOUTHERN NIGERIA REGIMENT.

- 1 Battery of Artillery.
- 2 Battalions of Infantry.
- Chiefly Yorubas and Hausas

#### THE GOLD COAST REGIMENT.

- 1 Battery of Artillery.
- 1 Battalion of Infantry.
- Chiefly recruited from the Northern Territories of the Gold Coast from the following tribes:—Grunshis, Wongaras, Moshis, Dagartis, Dagombas and Fra-Fras.

#### THE SIERRA LEONE REGIMENT.

- 1 Battalion of Infantry, who are Mendis and Timinis.

## THE KACHINS AND OTHERS.

### A new recruiting area.

BY CAPTAIN A. APTHORPE, 90TH PUNJABIS.

The peoples dealt with in this paper live in the vicinity of our N.-E. Frontier, to which considerable attention has been given in the last twelve months.

It is thought that there exists here a large and as yet almost untapped recruiting area, and at a time when misgivings as to the longevity of some of our present sources are expressed, any fresh ones would seem well worthy of consideration.

Kachin is the official name given to the inhabitants of the mountainous tracts which lie at and beyond the extreme north of Burma. Their country extends roughly between longitudes  $96^{\circ}$  and  $98^{\circ} 50'$  and latitudes  $22^{\circ}$  and  $28^{\circ} 30'$  although they are found south of these limits as far as  $20^{\circ} 30'$ . A glance at the map will show this country consists of the watershed of the Mali Hka, together with the hilly tracts further south, on both sides of the Irrawaddy and its tributaries the Mogaung, Taping, and Shweli rivers.

A not inconsiderable number of Kachins live in Chinese territory on the mountains along the Burma-Yunnan boundary, to the east and south-east of the Myitkyina and Bhamo districts.

The earlier history of the Kachins, or—to give them the name they call themselves—"Jinghpaw," is rather obscure. According to our well-known authority the word Jinghpaw has the generic meaning "man" and comes from the Tibetan "sin po" a savage. The present official designation "Kachin" is the name given to the Jinghpaws by the Burmese, who suffered greatly at their hands. It is a corruption of the Chinese "Ye Jein," meaning a "wild man."

It is now generally agreed that the original home of the Kachins lay to the north of the gigantic mountain ranges of southern Tibet. These form the watershed between the Salween and the Brahmaputra and from their lower slopes rise the Mali Hka and Nmai Hka, which two rivers eventually unite and are then called the Irrawaddy.

According to one authority this mountain range or "crescent of mountains" is for a large portion of its length an impassable barrier; consequently any southern immigration on reaching this obstacle would naturally take a bend in a south-westerly direction towards Assam and the Brahmaputra, or else turn east and descend by way of the Salween valley.

In the country beyond the "crescent of mountains" is located the Majoi Shingra Pum or "naturally flat mountain" (plateau) referred to by all Kachins when questioned as to the whereabouts of their ancestral home, and it is from this country, either by the western or eastern route, that a large number of the present inhabitants of Burma, including the Burmans themselves, came.

Of the western migratory waves, that of the Kachins is considered to be one of the most recent. After following a south-westerly course bordering on the Brahmaputra region, the Kachins, on arrival at about 28° latitude, found the country to their immediate south already occupied, and were compelled to turn eastwards, before again continuing their downward course. It is reckoned that this eastward movement took place only a century ago, and brought them into contact with those Shans who dwell along the upper waters of the Irrawaddy, and who are remnants of the once powerful Shan or Tai kingdom of Nanchao which extended west from their capital in the neighbourhood of modern Talifu as far as Assam.

The Hukong valley, so called from the Kachin "ju" meaning "to burn" and "kawng," "a mound," referring to the numerous funeral mounds of the slain Shans in the valley, bears witness to this day of the severe fighting that took place.

The Kachins did not apparently gain ground much to the east of the Mali Hka. South of the confluence, however, they rapidly spread themselves over the country on both sides of the big river. At the present day those who live to the north of and round about the confluence are alluded to by their more southern brethren as Hkahkas or up-river people.

Besides being split up into numerous subtribes, all Kachins recognise five parent tribes—Lepai, Lahtawng, Maran, Nhkum, and Marip.

Allowing for local changes, the dress, customs, habits and language of the Kachins from the Hukong valley to their most southern habitat in the Shan States are identical.

Included under the official designation "Kachin" are the Marus with the cognate tribes the Lashi and Atsi. These are now generally considered to have been the prehistoric inhabitants of the Irrawaddy valley from Bhamo northwards. They made their way into Burma by the eastern or Salween route at a far earlier date than the western incursion of the Kachins (Jinghpaws). They are found all along the valley of the Nmai Hka and in scattered communities in the Myitkyina and Bhamo districts and the Northern Shan States. Below the confluence all three have assimilated closely with the Kachins. They still, as a rule, speak their own dialects, which differ considerably from Kachin, approaching more closely to Burmese.

Yet another tribe to be briefly mentioned are the Lisaws, or, as they are generally called where met with in Burma, Yaw-yins. The Lisaws, identical with the Lisus, made their way down south from their original home in Tibet by the eastern Salween valley route. They never entered Burma in any large numbers, their country at the present day being along the Salween valley between latitudes 27° 30' and 26°. They are however to be found in British territory on the edge of the Kachin country. Their villages as a rule are built on the highest ridges. They speak their own dialect, but most of the men know Chinese and a fair number Kachin.

The physical aspects of the Kachin country are very similar over the whole of its area, namely, steep mountain ranges covered with dense jungle, much broken up by narrow and often precipitous sided valleys. During the long rainy season from May to November the higher peaks are veiled in clouds for days on end and any movement over the hills is most difficult.

The average height of the Kachin is between about 5' 5" to 5' 7". His body is usually well developed and thick set; his features are of a Mongolian type. The men wear their hair uncut twisted up into a top-knot, and clothe themselves in a short jacket and loose trousers of home-made cotton cloth, dyed blue with an extract from the Mahtat lap or indigenous indigo plant leaf.

No Kachin is ever seen abroad without his *dah* (local sword) slung over his left shoulder, and a brightly woven coloured bag, often ornamented with silver and cowries, suspended from the opposite side.

The Kachin is usually an agriculturist—and a good one too—either employing the system of Yi, or hillside cultivation, whereby whole hillsides in the Bhamo district have been denuded of jungle, or undertaking the Hkauna or lowland cultivation. Rice, the chief article of food, is the principal crop.

A few ponies and a considerable number of cattle and pigs are bred, the two latter for sacrificial use in religious ceremonies as well as for sale or barter. Goats are seldom seen, sheep never. Kachins say the climatic conditions of the hills in the rains prevent the rearing of the latter.

The Kachins in the northern tracts are keen rubber traders. Further south they bring chiefly rice and potatoes, laden on pack bullocks, into the larger markets and take back salt, matches, strip-iron, and piece-goods.

Contrary to what is sometimes stated, the Kachin is not as a rule addicted to opium, in fact large numbers of them never touch it. He is a spirit worshipper, and his whole horizon is bounded by a multitude of malicious and beneficent *nats* which demand a large expenditure of his time and worldly goods in the shape of sacrifices to cajole or keep in a kindly attitude. In the rear compartment of every house is the altar to the house *nat*, while outside will be altars of various shapes to the *nat* of the jungle (usually evilly disposed), the earth-*nat*, and the sky-*nat*. "Dumsas" or head priests, with their subordinates the Hkrinjawng and Hpunlum Was, carry out the *nat* sacrifices and manage the religious dances. Besides these there are also the professional narrators or soothsayers—Jaiwas—and those curious beings called Myithois, who claim to be able to throw themselves into trances and hold communication with the *nats*, not unlike the spiritual mediums of the western world.

As might be expected, the Kachin is ever ready to believe in the adverse influence of witches and the like, and if unable to obtain satisfaction from his enemy, he is not above resorting to the old



world habit of casting spells and sticking thorns into a make-believe image of the unhappy individual whose death he wishes to encompass. His religious beliefs find outlet in his folklore. Thus the rainbow is caused by a crab inhabiting the centre of the world, and the eclipse of the sun is due to a frog which swallows that element, whilst a dog is supposed to perform the same task in the case of the moon.

The Kachin is as a rule monogamous, although a plurality of wives is not forbidden. Daughters are looked upon as a species of vested capital, for any would-be son-in-law must pay the parents their child's price according to a fixed scale. Consequently for a couple to elope before satisfying the parental demands is considered little short of robbery and constitutes just grounds for a debt.

Old men are credited with the power of being able to give up their life at will and hence the saying of a father dying to spite his son. For a younger sister to marry before an elder is considered highly improper, and a small fine is usually incurred thereby.

In former days all injuries, real or fancied, gave rise to debts which if unsettled soon developed into blood-feuds. Apparently any debt could be wiped out by paying compensation on a recognised scale, the highest rate being for murder cases, with varying amounts for adultery, abduction, concealing a slave, and other offences. The non-payment of this compensation resulted generally in the killing or selling into slavery of the offenders and the burning of the village which harboured them, always provided of course that the opposite party were strong enough to do so.

As showing to what lengths this system was carried, a man incurred a debt if an unmarried girl, with whom he had had relations, died in child-birth, or an employer, should one of his servants be accidentally killed whilst engaged in his master's affairs, became thereby responsible for his death.

Before we took their country, slavery was universal. The supply was recruited from captives taken in inter-tribal warfare or, as remarked above, by the settling of some outstanding debt. Apparently slaves, if well behaved and so long as they made no attempt to regain their liberty, were kindly treated, their position in their master's house being similar to that of the Saxon serf, rather than of a slave.

The offspring of a free man and slave woman were free, but on the other hand the child of a male slave and free woman was considered a slave. The above remarks apply, with a few minor exceptions, to the Marus, Lashis and Atsis also.

The Yaw-yin or Lisaw requires a few remarks to himself. In stature he is appreciably taller and is heavier than the Kachin. He is credited with great powers of endurance, but is usually duller witted. Living at too high an altitude to grow paddy, his food is maize. His dress, where he has not adopted the ordinary Kachin pattern, consists of a long blue hempen tunic with trousers beneath. The men usually have pigtails, but wear them coiled up round the

head. They have assimilated much with the Chinese of Yunnan, but those in British territory inter-marry nowadays with the Kachins.

Prior to our annexation of Upper Burma, the Kachin led a strenuous and troubled existence. His life was one long struggle against the elements, the *nats*, and his enemies, varied by raids on a Chinese trader's caravan or some Shan or Burmese village in the plains.

During the subjugation of their country the Kachins fought stoutly against our columns, nor did they rely only on a system of defensive warfare carried on from behind their stockades, for on more than one occasion they assumed the offensive. They were badly armed, possessing no artillery and only roughly made muzzle-loading guns, while some had only *dahs* and spears. But what told against them as much as their defective armament was the total absence of any sustained combined effort. That this was the case, was due largely to the peculiar circumstances of their country. Their chieftains or "Duwas" were generally of small account and possessed only local influence, and there were large tracts of country where the people recognised no chiefs at all.

A few incidents that occurred during pacification of their country will be of interest:—

In April 1886 near Chandauk in the Bhamo district, a column of two guns and 120 rifles British and Indian troops attacked the Kachins in a stockade and drove them out, having two B. O.'s and eight men wounded.

In November of the same year a band of Kachins made their way by night into the stockaded fort at Bhamo, killed three sepoys and fired the barracks. They were driven out leaving five dead behind.

In May 1888 a force of over 400 Kachins and Shans operated against the post at Mogaung. They were defeated after severe fighting, having 40 killed and many wounded, whilst our casualties were 8 killed and 15 wounded.

In the open season of 1888-89 it was necessary to send out four expeditions against the Kachins, the whole of the operations being under the direction of Sir George White.

In February 1889 a small body of 50 military police came into contact with the Kachins 30 miles south of Bhamo at Malin, and after losing two killed and 10 wounded were forced to retire and abandon most of their baggage. A force of two guns, 50 British infantry, and 150 Indian infantry sent out to exact reprisal, met with considerable opposition and lost one officer and four men killed and 17 wounded before defeating the enemy.

In March 1891 at Hanton in the Bhamo district, a small column of 75 military police under a British officer was, owing to the carelessness of a sentry, surprised at night and had two men killed and 10 wounded.

In the early part of 1893 occurred the operations in the neighbourhood of Sima post, east of Mytkyina. On the same day on which

the Kachins rushed and burnt down part of Myitkyina, Sima post was attacked at daybreak by about 500 Kachins.

On the 30th January 1893 the Kachins were cleared out of their stockaded position at Kamja, our troops having five killed and six wounded. This stockade was about 150 yards in perimeter, made of a double row of bamboos closely *panjied*, and was built on the site of an old grave, consequently there was a circular ditch inside. This ditch was some 8 feet deep and 10 feet wide with a circumference of 140 yards.

Altogether the operations round Sima lasted about seven weeks. Some 1,200 rifles were employed and three British officers were killed, two British officers and 102 men wounded.

The branch of the service to which the Kachin is most suited is the infantry. Neither his build nor his inclination allow him to be a good rider, and he is not big enough for mountain artillery work. At the present time he does not possess the skill or technical knowledge of the Burman, Shan, Chinese or Indian craftsman, although he might in the future be capable of being trained as a sapper.

For some years Kachins have been enlisted in the two frontier military police battalions of Myitkyina and Bhamo, and they furnish equally with the Gurkhas and Punjabis in these battalions, their quota of drill, musketry, and gymnastic instructors, signallers, buglers and drummers. A certain number of Marus, Lashis, Atzis and Yaw-yins are also enlisted.

A considerable number of men pass as interpreters in Hindustani and Burmese. Having no alphabet, the Kachin language is written in the Roman character. A fair number of men soon pick up enough to read and write their own language.

Kachins were first used on field service in the cold season of 1898-99 during some operations to the north-east of Myitkyina and were reported on as having behaved excellently well, one havildar and three sepoy receiving rewards for gallantry.

They were employed also as part of the escort on the Anglo-Chinese boundary commission of 1899-1900 where they won the favourable opinion of Sir George Scott, head of the commission. The work of this commission lasted for over six months and took place in a very rough difficult terrain—reliable proof of the Kachin's amenability to discipline and his capability of undergoing fatigue and hardship.

In more recent years they formed part of the Wellaung column which in 1906 advanced into the unadministered Chin territory, and of the column which advanced to Pienma in January 1911.

For service along the whole stretch of the lengthy Burmo-Chinese frontier, rice-eating troops, used to a jungle covered mountainous terrain, would appear to be peculiarly adapted. Attention has lately been drawn to the new Chinese army, with varying reports as to its present numbers and efficiency, and still vaguer forecastes as to its future value as a fighting machine. Those who

know speak of the possibility of China's new spirit of progression leading to one of aggression, and although, as pointed out a few months ago in the pages of this magazine, the most vulnerable place of demonstration against China would be from the Peking side, hostilities would in all probability occur on our N.-E. frontier as well. In such eventualities regiments of Kachins, carefully enlisted and trained by officers well acquainted with their language and in sympathy with their habits and characteristics, would, it is reasonably expected, be well qualified to take their place alongside the other races of our Eastern Empire and contribute their share to the traditions of our Indian Army.

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The warning officer should then go back and shout, or pass up to him, through the ranks, and each man should drop back towards the N.C.O. at the same time as he passes the warning to the man in front of him.

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The duty of covering the movement out of the camp by the rear guard requires great unity of execution, and the greatest vigilance is required on its part; during the confusion of marching out of camp a splendid opportunity arrives for an active foe to harass the column.

Bugle calls should not be employed, except during a fight, for an alarm, or for assembly after a fight. In camp the "Alarm" should never be sounded at night unless it is absolutely unavoidable, but troops should be aroused and fall in as silently as possible on their alarm posts and await orders.

Night operations on a large scale in the bush are not recommended. If deemed essential in any particular case, the operation should be carried out by as small a party as possible. The country should be carefully reconnoitred by day, and, if practicable, by the same men who are to carry out the project.

The organization of the carrier transport is one of the most important things the commander of a field force has to see to. In large expeditions carriers are formed into battalions, or "groups," each of 1,000 men belonging to one tribe. Each "group" should be under the command of a British officer, and he should have a proper proportion of N.-C. O.'s to assist him. Each "group" comprises 10 companies, each under a native "captain," and each company is made up of five gangs of about 20 men, each gang being under a "headman."

Every group will have a distinctive letter, or number and badge; a coloured band with buckle worn round the arm is the best.

With regard to native levies, from my own personal experience of them I do not consider they are of much value to a commander; they are in reality more often a handicap. Levies have been used on many occasions, notably so in the various Ashanti campaigns. In 1873 some 1,500 Akims were sent by Lord Wolseley, under British officers, to operate in the country to the east of the main advance, and they fled at the first approach of an Ashanti warrior. Sir James Willcocks employed 4,000 levies for a similar purpose in 1900, with exactly the same results. But when employed strategically on a flank in this way, especially if thereby the enemy's line of retreat is threatened, they assist the general advance by compelling the enemy to detach a force to intercept them.

In conclusion, there is one golden rule to follow in fighting badly armed savages in the bush, and that is—

Don't give your enemy any leisure to reload his gun, but keep him on the move, and press home your attack with the bayonet.

A few words with reference to the West African Frontier Force may be of interest.

Its composition at the present time is as follows :—

#### THE NORTHERN NIGERIA REGIMENT.

- 1 Battery of Artillery.
- 1 Battalion of Mounted Infantry.
- 2 Battalions of Infantry.
- Chiefly Fullanis, Hausas and Yorubas.

#### THE SOUTHERN NIGERIA REGIMENT.

- 1 Battery of Artillery.
- 2 Battalions of Infantry.
- Chiefly Yorubas and Hausas

#### THE GOLD COAST REGIMENT.

- 1 Battery of Artillery.
- 1 Battalion of Infantry.
- Chiefly recruited from the Northern Territories of the Gold Coast from the following tribes :—Grunshis, Wongaras, Moshis, Dagartis, Dagombas and Fra-Fras.

#### THE SIERRA LEONE REGIMENT.

- 1 Battalion of Infantry, who are Mendis and Timinis.

## THE KACHINS AND OTHERS.

### A new recruiting area.

BY CAPTAIN A. APTHORPE, 90TH PUNJABIS.

The peoples dealt with in this paper live in the vicinity of our N.-E. Frontier, to which considerable attention has been given in the last twelve months.

It is thought that there exists here a large and as yet almost untapped recruiting area, and at a time when misgivings as to the longevity of some of our present sources are expressed, any fresh ones would seem well worthy of consideration.

Kachin is the official name given to the inhabitants of the mountainous tracts which lie at and beyond the extreme north of Burma. Their country extends roughly between longitudes  $96^{\circ}$  and  $98^{\circ} 50'$  and latitudes  $22^{\circ}$  and  $28^{\circ} 30'$  although they are found south of these limits as far as  $20^{\circ} 30'$ . A glance at the map will show this country consists of the watershed of the Mali Hka, together with the hilly tracts further south, on both sides of the Irrawaddy and its tributaries the Mogaung, Taping, and Shweli rivers.

A not inconsiderable number of Kachins live in Chinese territory on the mountains along the Burma-Yunnan boundary, to the east and south-east of the Myitkyina and Bhamo districts.

The earlier history of the Kachins, or—to give them the name they call themselves—"Jinghpaw," is rather obscure. According to our well-known authority the word Jinghpaw has the generic meaning "man" and comes from the Tibetan "sin po" a savage. The present official designation "Kachin" is the name given to the Jinghpaws by the Burmese, who suffered greatly at their hands. It is a corruption of the Chinese "Ye Jein," meaning a "wild man."

It is now generally agreed that the original home of the Kachins lay to the north of the gigantic mountain ranges of southern Tibet. These form the watershed between the Salween and the Brahmaputra and from their lower slopes rise the Mali Hka and Nmai Hka, which two rivers eventually unite and are then called the Irrawaddy.

According to one authority this mountain range or "crescent of mountains" is for a large portion of its length an impassable barrier; consequently any southern immigration on reaching this obstacle would naturally take a bend in a south-westerly direction towards Assam and the Brahmaputra, or else turn east and descend by way of the Salween valley.

In the country beyond the "crescent of mountains" is located the Majoi Shingra Pum or "naturally flat mountain" (plateau) referred to by all Kachins when questioned as to the whereabouts of their ancestral home, and it is from this country, either by the western or eastern route, that a large number of the present inhabitants of Burma, including the Burmans themselves, came.



Of the western migratory waves, that of the Kachins is considered to be one of the most recent. After following a south-westerly course bordering on the Brahmaputra region, the Kachins, on arrival at about 28° latitude, found the country to their immediate south already occupied, and were compelled to turn eastwards, before again continuing their downward course. It is reckoned that this eastward movement took place only a century ago, and brought them into contact with those Shans who dwell along the upper waters of the Irrawaddy, and who are remnants of the once powerful Shan or Tai kingdom of Nanchao which extended west from their capital in the neighbourhood of modern Talifu as far as Assam.

The Hukong valley, so called from the Kachin "ju" meaning "to burn" and "kawng," "a mound," referring to the numerous funeral mounds of the slain Shans in the valley, bears witness to this day of the severe fighting that took place.

The Kachins did not apparently gain ground much to the east of the Mali Hka. South of the confluence, however, they rapidly spread themselves over the country on both sides of the big river. At the present day those who live to the north of and round about the confluence are alluded to by their more southern brethren as Hkakkas or up-river people.

Besides being split up into numerous subtribes, all Kachins recognise five parent tribes—Lepai, Lahtawng, Maran, Nhkum, and Marip.

Allowing for local changes, the dress, customs, habits and language of the Kachins from the Hukong valley to their most southern habitat in the Shan States are identical.

Included under the official designation "Kachin" are the Marus with the cognate tribes the Lashi and Atsi. These are now generally considered to have been the prehistoric inhabitants of the Irrawaddy valley from Bhamo northwards. They made their way into Burma by the eastern or Salween route at a far earlier date than the western incursion of the Kachins (Jinghpaws). They are found all along the valley of the Nmai Hka and in scattered communities in the Myitkyina and Bhamo districts and the Northern Shan States. Below the confluence all three have assimilated closely with the Kachins. They still, as a rule, speak their own dialects, which differ considerably from Kachin, approaching more closely to Burmese.

Yet another tribe to be briefly mentioned are the Lisaws, or, as they are generally called where met with in Burma, Yaw-yins. The Lisaws, identical with the Lisus, made their way down south from their original home in Tibet by the eastern Salween valley route. They never entered Burma in any large numbers, their country at the present day being along the Salween valley between latitudes 27° 30' and 26°. They are however to be found in British territory on the edge of the Kachin country. Their villages as a rule are built on the highest ridges. They speak their own dialect, but most of the men know Chinese and a fair number Kachin.

The physical aspects of the Kachin country are very similar over the whole of its area, namely, steep mountain ranges covered with dense jungle, much broken up by narrow and often precipitous sided valleys. During the long rainy season from May to November the higher peaks are veiled in clouds for days on end and any movement over the hills is most difficult.

The average height of the Kachin is between about 5' 5" to 5' 7". His body is usually well developed and thick set; his features are of a Mongolian type. The men wear their hair uncut twisted up into a top-knot, and clothe themselves in a short jacket and loose trousers of home-made cotton cloth, dyed blue with an extract from the Mahtat lap or indigenous indigo plant leaf.

No Kachin is ever seen abroad without his *dah* (local sword) slung over his left shoulder, and a brightly woven coloured bag, often ornamented with silver and cowries, suspended from the opposite side.

The Kachin is usually an agriculturist—and a good one too—either employing the system of Yi, or hillside cultivation, whereby whole hillsides in the Bhamo district have been denuded of jungle, or undertaking the Hkauna or lowland cultivation. Rice, the chief article of food, is the principal crop.

A few ponies and a considerable number of cattle and pigs are bred, the two latter for sacrificial use in religious ceremonies as well as for sale or barter. Goats are seldom seen, sheep never. Kachins say the climatic conditions of the hills in the rains prevent the rearing of the latter.

The Kachins in the northern tracts are keen rubber traders. Further south they bring chiefly rice and potatoes, laden on pack bullocks, into the larger markets and take back salt, matches, strip-iron, and piece-goods.

Contrary to what is sometimes stated, the Kachin is not as a rule addicted to opium, in fact large numbers of them never touch it. He is a spirit worshipper, and his whole horizon is bounded by a multitude of malicious and beneficent *nats* which demand a large expenditure of his time and worldly goods in the shape of sacrifices to cajole or keep in a kindly attitude. In the rear compartment of every house is the altar to the house *nat*, while outside will be altars of various shapes to the *nat* of the jungle (usually evilly disposed), the earth-*nat*, and the sky-*nat*. "Dumsas" or head priests, with their subordinates the Hkrinjawng and Hpunlum Was, carry out the *nat* sacrifices and manage the religious dances. Besides these there are also the professional narrators or soothsayers—Jaiwas—and those curious beings called Myithois, who claim to be able to throw themselves into trances and hold communication with the *nats*, not unlike the spiritual mediums of the western world.

As might be expected, the Kachin is ever ready to believe in the adverse influence of witches and the like, and if unable to obtain satisfaction from his enemy, he is not above resorting to the old

world habit of casting spells and sticking thorns into a make-believe image of the unhappy individual whose death he wishes to encompass. His religious beliefs find outlet in his folklore. Thus the rainbow is caused by a crab inhabiting the centre of the world, and the eclipse of the sun is due to a frog which swallows that element, whilst a dog is supposed to perform the same task in the case of the moon.

The Kachin is as a rule monogamous, although a plurality of wives is not forbidden. Daughters are looked upon as a species of vested capital, for any would-be son-in-law must pay the parents their child's price according to a fixed scale. Consequently for a couple to elope before satisfying the parental demands is considered little short of robbery and constitutes just grounds for a debt.

Old men are credited with the power of being able to give up their life at will and hence the saying of a father dying to spite his son. For a younger sister to marry before an elder is considered highly improper, and a small fine is usually incurred thereby.

In former days all injuries, real or fancied, gave rise to debts which if unsettled soon developed into blood-feuds. Apparently any debt could be wiped out by paying compensation on a recognised scale, the highest rate being for murder cases, with varying amounts for adultery, abduction, concealing a slave, and other offences. The non-payment of this compensation resulted generally in the killing or selling into slavery of the offenders and the burning of the village which harboured them, always provided of course that the opposite party were strong enough to do so.

As showing to what lengths this system was carried, a man incurred a debt if an unmarried girl, with whom he had had relations, died in child-birth, or an employer, should one of his servants be accidentally killed whilst engaged in his master's affairs, became thereby responsible for his death.

Before we took their country, slavery was universal. The supply was recruited from captives taken in inter-tribal warfare or, as remarked above, by the settling of some outstanding debt. Apparently slaves, if well behaved and so long as they made no attempt to regain their liberty, were kindly treated, their position in their master's house being similar to that of the Saxon serf, rather than of a slave.

The offspring of a free man and slave woman were free, but on the other hand the child of a male slave and free woman was considered a slave. The above remarks apply, with a few minor exceptions, to the Marus, Lashis and Atsis also.

The Yaw-yin or Lisaw requires a few remarks to himself. In stature he is appreciably taller and is heavier than the Kachin. He is credited with great powers of endurance, but is usually duller witted. Living at too high an altitude to grow paddy, his food is maize. His dress, where he has not adopted the ordinary Kachin pattern, consists of a long blue hempen tunic with trousers beneath. The men usually have pigtails, but wear them coiled up round the

head. They have assimilated much with the Chinese of Yunnan, but those in British territory inter-marry nowadays with the Kachins.

Prior to our annexation of Upper Burma, the Kachin led a strenuous and troubled existence. His life was one long struggle against the elements, the *nats*, and his enemies, varied by raids on a Chinese trader's caravan or some Shan or Burmese village in the plains.

During the subjugation of their country the Kachins fought stoutly against our columns, nor did they rely only on a system of defensive warfare carried on from behind their stockades, for on more than one occasion they assumed the offensive. They were badly armed, possessing no artillery and only roughly made muzzle-loading guns, while some had only *dahs* and spears. But what told against them as much as their defective armament was the total absence of any sustained combined effort. That this was the case, was due largely to the peculiar circumstances of their country. Their chieftains or "Duwas" were generally of small account and possessed only local influence, and there were large tracts of country where the people recognised no chiefs at all.

A few incidents that occurred during pacification of their country will be of interest:—

In April 1886 near Chandauk in the Bhamo district, a column of two guns and 120 rifles British and Indian troops attacked the Kachins in a stockade and drove them out, having two B. O.'s and eight men wounded.

In November of the same year a band of Kachins made their way by night into the stockaded fort at Bhamo, killed three sepoy and fired the barracks. They were driven out leaving five dead behind.

In May 1888 a force of over 400 Kachins and Shans operated against the post at Mogaung. They were defeated after severe fighting, having 40 killed and many wounded, whilst our casualties were 8 killed and 15 wounded.

In the open season of 1888-89 it was necessary to send out four expeditions against the Kachins, the whole of the operations being under the direction of Sir George White.

In February 1889 a small body of 50 military police came into contact with the Kachins 30 miles south of Bhamo at Malin, and after losing two killed and 10 wounded were forced to retire and abandon most of their baggage. A force of two guns, 50 British infantry, and 150 Indian infantry sent out to exact reprisal, met with considerable opposition and lost one officer and four men killed and 17 wounded before defeating the enemy.

In March 1891 at Hanton in the Bhamo district, a small column of 75 military police under a British officer was, owing to the carelessness of a sentry, surprised at night and had two men killed and 10 wounded.

In the early part of 1893 occurred the operations in the neighbourhood of Sima post, east of Mytkyina. On the same day on which

the Kachins rushed and burnt down part of Myitkyina, Sima post was attacked at daybreak by about 500 Kachins.

On the 30th January 1893 the Kachins were cleared out of their stockaded position at Kamja, our troops having five killed and six wounded. This stockade was about 150 yards in perimeter, made of a double row of bamboos closely *panjied*, and was built on the site of an old grave, consequently there was a circular ditch inside. This ditch was some 8 feet deep and 10 feet wide with a circumference of 140 yards.

Altogether the operations round Sima lasted about seven weeks. Some 1,200 rifles were employed and three British officers were killed, two British officers and 102 men wounded.

The branch of the service to which the Kachin is most suited is the infantry. Neither his build nor his inclination allow him to be a good rider, and he is not big enough for mountain artillery work. At the present time he does not possess the skill or technical knowledge of the Burman, Shan, Chinese or Indian craftsman, although he might in the future be capable of being trained as a sapper.

For some years Kachins have been enlisted in the two frontier military police battalions of Myitkyina and Bhamo, and they furnish equally with the Gurkhas and Punjabis in these battalions, their quota of drill, musketry, and gymnastic instructors, signallers, buglers and drummers. A certain number of Marus, Lashis, Atzis and Yaw-yins are also enlisted.

A considerable number of men pass as interpreters in Hindustani and Burmese. Having no alphabet, the Kachin language is written in the Roman character. A fair number of men soon pick up enough to read and write their own language.

Kachins were first used on field service in the cold season of 1898-99 during some operations to the north-east of Myitkyina and were reported on as having behaved excellently well, one havildar and three sepoy receiving rewards for gallantry.

They were employed also as part of the escort on the Anglo-Chinese boundary commission of 1899-1900 where they won the favourable opinion of Sir George Scott, head of the commission. The work of this commission lasted for over six months and took place in a very rough difficult terrain—reliable proof of the Kachin's amenability to discipline and his capability of undergoing fatigue and hardship.

In more recent years they formed part of the Wellaung column which in 1906 advanced into the unadministered Chin territory, and of the column which advanced to Pienma in January 1911.

For service along the whole stretch of the lengthy Burmo-Chinese frontier, rice-eating troops, used to a jungle covered mountainous terrain, would appear to be peculiarly adapted. Attention has lately been drawn to the new Chinese army, with varying reports as to its present numbers and efficiency, and still vaguer forecasts as to its future value as a fighting machine. Those who

know speak of the possibility of China's new spirit of progression leading to one of aggression, and although, as pointed out a few months ago in the pages of this magazine, the most vulnerable place of demonstration against China would be from the Peking side, hostilities would in all probability occur on our N.-E. frontier as well. In such eventualities regiments of Kachins, carefully enlisted and trained by officers well acquainted with their language and in sympathy with their habits and characteristics, would, it is reasonably expected, be well qualified to take their place alongside the other races of our Eastern Empire and contribute their share to the traditions of our Indian Army.



## THE SUPPLY OF HORSES IN AUSTRALIA AND ITS EFFECT ON THE INDIAN MARKET.

BY LIEUT. G. DE LA POER BERESFORD, 10TH LANCERS.

A very slight explanation of the conditions affecting the supply of horses in Australia should suffice to cause those who regard it as a constant quantity to look for some means of making it more certain.

There was a very heavy call on the horse-supply for the South African war, followed by further demands for China and the German and American possessions in the South Sea Islands; and the Japanese took away a lot of horses in 1903-04.

The export to India went steadily on in the meantime, and within the past four or five years their loss has begun to be felt: for so many mares have been exported that the numbers left to breed from has been greatly reduced. The fact that mares are exported without any restriction as to numbers, and that only the best are taken, must already have affected seriously the standard of horses produced from year to year.

In the past fifteen years the demand for farm horses in Australia has been increased probably one hundred per cent, for the simple reason that wheat-growing under new and scientific methods has opened up very large areas for farming, and recent legislation regarding closer settlement has so broken up the large estates, that farm horses cannot be produced quickly enough to meet local requirements.

Prices have been rising steadily ever since 1900, and the increased demand for farm horses has been met in a manner that will, in future years, tell most seriously on the type of horse available, particularly in New South Wales, Victoria, and South Australia; *viz.*, draught or Suffolk Punch, or Clydesdale stallions have been mated with the good strains of light harness and saddle horses in order to produce animals with large bodies that would readily sell as farm horses.

To a man suddenly possessed of an area of wheat-growing land some kind of a plough horse is an absolute necessity, and he must buy whatever he can get. The owner of a mare, seeing a good market for a plough horse sets himself to breed one, regardless of the fundamental principles of horse-breeding. This demand is bound to continue for a considerable time, and as it eases off, the process of weeding out will begin; farmers will pick and choose their horses more carefully; but the residue will in no way be suited for export for any purposes.

The extraordinary popularity of the trotting strains in the southern colonies is deplorable. Trotters when mated with the old stamp of light saddle and harness mares have produced an entirely



new type, a round-boned horse with an indifferent body, straight shoulders, a clumsy trotting gait, and an impossible canter or gallop. They are certainly of a very docile disposition, with good constitutions, and are probably excellent slaves for tradesmen's carts. But even if they were suitable, these horses now command prices that put them out of the question for remount purposes.

Horses of the good old breedy type are rapidly becoming fewer and harder to get in New South Wales. Victoria still breeds some first class light ones, but the prices realised at the chief sales there show that the supply is in no way equal to the demand.

It is to be noted that the extension of railways and the introduction of, firstly, bicycles, and latterly, motors, has already done much to abolish the necessity of keeping good saddle and harness horses by such people as professional men and landholders classes of men, who, by reason of the necessity of getting about the country with the least possible delay used to supply themselves with the best horse-flesh they could get. Years ago, one constantly heard a country doctor say with pride that his pair of breedy-looking buggy horses took him forty miles and back in a certain time; now he talks of his particular brand of motor and of the amount of money it saves him a year. Electric trams, motorbuses, and taxicabs will in time drive horse-drawn vehicles off the streets of the cities. The bicycle has almost entirely replaced the saddle horse in the case of labouring men who used to travel long distances in search of highly-paid employment like sheep shearing. On large grazing properties, owing to extensive subdivision by fencing, fewer horses are kept—in fact, some employees have already mounted their men on motor bicycles.

The above reasons, coupled with the lessened demand for light horses and the fact that sheep are far more profitable than any kind of horses, have done much to eliminate what was a really good stamp of horse for saddle work and replace it by one more suited to fill local requirements.

Not only are the southern agricultural states of Australia dropping out of the competition to supply India with horses, but they are actually beginning to compete against India as buyers in a way that must sooner or later seriously affect not only the price of Australian horses in India but also the scope of the supply. For instance, a regular trade in heavy farm horses has already sprung up between Queensland and the other states, and prices now ruling are so high that breeders in Queensland will be bound to turn their attention to the market that pays them best, and their action in so doing will automatically curtail the supply left for export.

There are doubtless a large number of horses in Queensland at the present time of the type required for India, but we must look ahead, and consider whether the supply from that quarter will remain constant and sufficient to meet all demands; also whether the class of horse supplied will not further deteriorate at a time when buyers in India are clamouring for an improvement.

The proposed extension of the railway system of Queensland will open up an enormous area of some of the finest limestone country in the world. Experts state that horses bred in this region and fed on nothing but the natural grasses grow as well as horses produced elsewhere that have been grain-fed from the time they were weaned. But this tract of country has, owing to water conservation and artesian bores, become almost entirely sheep-raising. Horses and cattle don't pay so well. It is claimed that the change which has already set in with regard to the type of horses in the other states, will rapidly follow in Queensland, though possibly not to such a marked degree. The natural conclusion to draw is that the present supply will decrease or will be maintained by the inclusion of animals of an inferior type.

It is surely the aim of every one interested in the buying of Waler remounts in this country to improve quality. If, as we are told, the price will go up, then let us at least see that the quality goes up too; and since, as has been shown above, conditions for improving the standard in Australia are practically certain to become less favourable in the near future, it behoves us to lose no time in getting to work. Let us either make some efforts to induce companies or individuals to try and cater for our requirements, or, better still, let us try and get land and do it ourselves.



## ARTILLERY REFORM.

BY CAPTAIN H. L. NEVILL, D.S.O., R.F.A.

**NOTE.**—The following presents a theory held for some time, and confirmed by impressions gained while serving on the Camp Staff at two practice camps in February 1911.

The cry for quicker artillery methods becomes louder and louder every day. A murmur to this effect has been audible amid still surroundings for many years, and has steadily been gathering strength, till now the voice of the Army is heard in terms of undisguised demand on every side. The Spirit of Reform is abroad, and is seeking admission to the house of the mobile branches of the Royal Artillery; it behoves those who dwell therein to throw open the door without delay, and incline their ears unto hearing.

The methods by which the theory and practice of gunnery have been taught in the past conduce to extreme accuracy of fire, rather than the immediate engagement of any desired target. The latter object of artillery fire requires somewhat careful description. The word rapid and its derivatives do not express quite the right meaning, for artillery officers have always striven to be able to bring a rapid fire on their targets in the shortest possible time, and, when once the range and fuze have been found, the most rapid rate of fire, of which the equipment is capable, has never presented any difficulty. The cry is now for an appreciable reduction of the time usually taken for guns to make their presence felt on the field from the time when their fire is requisitioned. To make their presence felt on the field the fire of guns need not necessarily be remarkable for extreme accuracy; occasions will frequently arise when their moral effect alone will suffice, as long as fire is opened quickly. The value of time, when fleeting opportunities are presented, is self-evident; it is a case of now or never.

The system of training in barracks, and on the practice ground, which aims at great accuracy of fire, and the numerous instruments which render the accuracy possible, have had an extended trial. That the result of the trial is unsatisfactory is proved by the repeated demand now heard for a curtailment of the usual interval between receipt of orders and the commencement of a method of fire which may be expected to produce some sort of moral or physical effect. It must not be supposed that the value of an accurate fire is any less now than it used to be, but if this accuracy can only be secured at the expense of that support which the other arms have a right to expect, the former must give way. The failure of what may be called the accuracy trial shows that, as a general rule, extreme precision and the furtherance of the tactical situation do not go hand in hand.

The number of instruments of various kinds now carried in a battery is so large, and so many men, who all constitute a link in the chain, are required for their manipulation, that the possible causes of delay are very numerous. In situations where time is a vital factor, artillery officers must be prepared to take more risks in their methods of directing their guns on to the target and finding the range and fuze without sacrifice of their ideals. The imposing body of horsemen, known as the brigade or battery staff, is a thorn in the side of every commander, and again and again some member of it risks betrayal of the position of the guns unnecessarily; if the number of these men cannot be diminished, but the occasions on which their services are required can be reduced to a minimum, the unit concerned will be freed from a fruitful source of adverse criticism.

It is a platitude to say that the artillery arm is entirely auxiliary to the others. It can never win a battle by itself; its rôle is to save loss rather than to inflict it. Against *ordinary* targets the effect of artillery fire is moral rather than physical, and in this connection the encouragement given to friendly troops by the sound of their guns in close support must not be overlooked. Now on the authority of Napoleon the moral is to the physical as three is to one, consequently it would appear that the benefit to be derived from encouraging the moral effect of artillery is three times as great as that to be expected from the physical. The conclusion is then that the training of the barrack square and the practice camp should be such as to secure this moral effect in the field.

It would seem as if artillerymen have expended all their capital on the foundations, and have nothing left with which to complete the edifice; it is time to issue debentures, and to apportion the funds so raised in such a way as to ensure the completion of the whole. Let us lay out our course from the other end; let us make sure of fulfilling the object for which we exist, which is to help the cavalry and infantry to win battles, even if our reputations for technical gunnery occasionally suffer.

The writer holds no brief for profuse and reckless shooting; at some targets deliberate and methodical ranging will always continue to be essential, but the occasions on which artillery will have to open an effective fire in a very short time for its own preservation, as well as the support of the other arms, must be much more numerous since the advent of the Q.-F. gun. The power of the defence to turn a sudden and rapid fire in any direction after careful previous preparation must be met by corresponding promptitude in attack. There is no need to enlarge here on the employment of artillery in attack and defence, but rather to put forward some scheme for carrying out the reform now generally demanded.

There are two ways in which quicker application of effective fire may be achieved; they are—

- (i) by introducing a new system of ranging,
- (ii) by modifying the present system of classification with a view to making it a means to the end.

The former is not to be recommended, because before a battery commander can shoot his battery quickly he must learn to shoot it slowly, and the methods now laid down in Field Artillery Training are the outcome of the extended trial already mentioned and may therefore be taken as the best that can be desired; when they have been mastered they may be taken as a guide for the quicker procedure now required.

The hope of salvation lies in the second suggestion. Marks and classification have produced accuracy in the past; they may be used again to promote speed, but the unit for classification should be the brigade, and not the battery. The brigade is the fighting unit, and batteries should learn in peace to combine for the effect which they would be required to produce in war. An objection that is raised sometimes to battery classification would then automatically disappear, and that is jealousy among the battery commanders of a brigade. Where real jealousy exists, it is puerile in the extreme and absolutely destructive to combined effort of any kind; but, fortunately, it is very rare, and is a very different thing from a spirit of friendly rivalry, which is to be encouraged.

In the case of targets such as batteries in action, and stationary troops not in close formation, the normal allotment of marks for classification purposes at present is given below\* :—

Manœuvre and fire tactics	...	...	...	...	60
Fire discipline	...	...	...	...	40
Accuracy in ranging	...	...	...	...	30
Percentage of effective shell	...	...	...	...	25
Percentage of target destroyed	...	...	...	...	20
Distribution	...	...	...	...	15
Time	...	...	...	...	10

An analysis of this table is instructive. Out of the sum total of 200 marks it will be seen that 115 or 57·5 per cent † are allotted to accuracy. Fire discipline is included under the head of accuracy because good fire discipline is essential if good fire effect is to be produced; the two are inseparable. Only 25 marks or 12·5 per cent ‡ are allotted for what may be called moral effect. Distribution of fire really comes under the head both of accuracy and moral effect, for it may help to produce good physical results, and also to spread the moral effect over a larger area, but it is bracketed with time to avoid any appearance of desiring to exaggerate the disproportionate value now attached to moral and physical effect.

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\* It is not overlooked that this is only a guide, but it is the general rule.

† Fire discipline	...	...	...	...	40
Accuracy in ranging	...	...	...	...	30
Percentage of effective shell	...	...	...	...	25
Percentage of target destroyed	...	...	...	...	20
					<hr/>
			Total	...	115
‡ Distribution	...	...	...	...	15
Time	...	...	...	...	10
					<hr/>
					25

The remaining 60 marks, or 30 per cent are allotted to manœuvre and fire tactics. In other words, the conditions which may enable a battery to open fire at all in support of other arms, and exist when its position is disclosed, are together rewarded with less marks than those accorded to accuracy of fire regardless of the time taken. The result must be a difference between practice camp conditions and those prevailing on service. A battery commander, whose personal prospects may depend on the classification of his battery, can hardly be expected to risk the all-important marks allowed for accuracy and strict adherence to the rules of ranging, for the sake of avoiding the criticism at the conference that his procedure was slow.

In the case of targets presenting a fleeting opportunity of any kind, the allotment of marks is, of course, modified at the discretion of the chief umpire, but there is still a tendency to exaggerate the value of hits and effective shrapnel at the expense of the marks awarded for rapidity of procedure.

It may be objected that the object of an artillery practice camp is to teach batteries to shoot, and that tactics may be learned at drill and manœuvres; but that is only part of the use that can be made of the annual allowance of service ammunition. A scheme for combining the two will be put forward later on, but it may be urged here that good shooting is only a means to an end, and that end is co-operation with the other arms. The tendency of troops of any kind on service is rightly to do as they have been trained to do in peace, consequently it must be wrong to tempt battery commanders, and their men, to adopt methods in peace which they would be compelled to discard to a great extent in war.

The system of classification which is now proposed is detailed hereunder:—

	Marks.	
(a) Fire tactics and manœuvre.	90	To include choice and method of occupation of position, choice of objective,* concealment and surprise, nature and rate of fire, handling of escort which should always be represented in some way if the tactical situation would render one necessary.
(b) Time occupied	50	{ Orders to 1st gun. 1st gun to method of fire. 1st gun to last gun.
Distribution ...	25	In some cases this might be more correctly called concentration.
Accuracy ...	35	As judged by effect and method of ranging.

\* More will be said about this later.

	For special.	For 1st.	For qualified.
Minimum in (a) ...	77	63	49
„ „ (b) ...	93	77	60
Total ...	170	140	109

The above system awards a certain number of marks for physical effect, about double that number for moral effect and about the same as the latter again for considerations which enable effect of any kind to be obtained at all. Modifications suggested by special targets might be made at the discretion of the chief umpire; it is not necessary to legislate for every contingency.

With the foregoing system of marking, battery commanders would have a direct incentive to rapid procedure, which would tend assuredly to produce the desired result without any change in the present rules of ranging, gun drill, or allocation of duties.

But before a battery is allowed to compete at test practice, it should be necessary for it to qualify at preliminary practice under the brigade commander. Preliminary practice should be regarded solely as instruction in shooting, and should be carried out, as at present, deliberately and at easy targets, practice being stopped if ammunition is clearly being wasted, and mistakes corrected. Batteries cannot be expected to shoot satisfactorily when time is important if they cannot do so when tactical considerations do not come in. If the brigade commander is not satisfied that a battery is fit to pass on to test practice, he should have authority to allot a further quantity of the battery's allowance of ammunition to preliminary practice. No doubt a brigade commander would be loth to adopt this course, but the difficulty could be met by holding brigade commanders responsible if a battery is allowed to compete at test practice that is obviously not qualified to do so. Tactical mistakes might be mentioned *en passant* at preliminary practice, but a brigade should be trained in tactics at drill, with or without blank ammunition.

To admit of the better instruction of individual batteries the first day's test practice should be by single batteries as now, and then by all batteries simultaneously. The first day's test practice would also serve as a check by which the Inspector of Artillery or, in his absence, the chief umpire could satisfy himself that each battery was fit to proceed to test practice in brigade.

Except at preliminary practice, and for certain classes of targets, it is suggested that there should be no range parties. Safety arrangements would be greatly simplified, batteries practising in brigade would be able to shoot simultaneously, and a long step taken towards eliminating practice camp conditions. Targets could



be put up beforehand representing the hostile dispositions, and the choice of the most suitable objective left to the discretion of the O. C. R. A. subject to orders given to him by the chief umpire as representative of the G. O. C.

The fire of some, or all, of the guns might even be turned on to points where there was no target at all, provided that notice was given to the chief umpire so that arrangements might be made to watch the effect; and, when this is done on his own initiative, credit should be given to the O. C. R. A. if his action is warranted by the tactical situation. At brigade practice the fire of more than one battery could be turned on to one target, because, in any case, the effect produced would count towards the classification of the brigade as a whole. Hits would be counted at the conclusion of the day's practice. If, for any reason, restrictions as to the positions of batteries, or choice of target, are desirable, the wording of the orders to the O. C. R. A. should be sufficiently supplemented, if necessary, by information from the chief umpire as to the tactical situation, and it would make things more realistic if arrangements could be made to indicate the movements of friendly troops. At present the umpire staff usually consists of 5 officers\* in addition to the Inspector of Artillery and his orderly officer, so the system proposed would probably render no increase necessary, and even if so, much is to be learnt and valuable experience gained by the officers detailed.

At preliminary practice, for surprise targets of any kind, † and for lyddite series from howitzers, range parties would have to be detailed as at present, but even at brigade practice the safety of the latter could be ensured by the siting of such targets, in addition to suitable arrangement of schemes, and making the position of the range party unmistakable.

The scheme proposed is really a compromise between the methods of our artillery and those of the French. We are numerically weak, so must aim at accuracy as well as rapidity, but besides our regular artillery we have territorial brigades to think of as well. It requires a life's training and constant practice to handle a Q.-F. battery on the present lines, and even then the aggregate result is not altogether satisfactory, so how is it possible to expect amateur officers, however patriotic and zealous they may be, to be successful brigade and battery commanders without some simplified form of procedure?

It is the system which is at fault, and not the officers and men or their equipment. It is evident that something must be done, and the simplest and most obvious course is to remove the temptations to which artillery commanders are virtually compelled to yield at peace practice, and make the marks allotted to the different heads bear their proper proportion to one another. Batteries shoot at practice as nearly as possible under service conditions, but these are

\* Chief umpire, staff officer, gunnery instructor, and two range officers.

† To count the number of effective bursts in air. But this might even be carried a step further, and effect judged from the battery end only.

not the conditions under which they are marked and classified. If the measure of a battery's efficiency were made less dependent on the extent of the 50 per cent length zone, and more on the tactical value of its work on the ground, it is confidently anticipated that artillery officers would soon cease to be compelled to suffer the humiliation of being virtually told that their batteries have failed in the task which we one and all desire them to fulfil.



## FLARES.

BY CAPT. G. R. P. WHEATLEY, 27TH LIGHT CAVALRY.

In January 1909, an article was published in this Journal, descriptive of an apparatus for obtaining a light at night automatically—

- (1) as a means of getting warning of the presence of an enemy;
- (2) as a means of defence, by lighting up the field of fire.

In the article in question some historic instances\* were quoted of night surprises and attacks by a savage enemy in mountain warfare, with a view to showing that there is a need of some such device. In this article it is proposed to quote some instances, other than in hill warfare, in which it would have been of great service to our troops, and to give an account of some actual experiences in brigade training and manœuvres with the apparatus in question.

In the Zulu War, 1879, when at Rorke's Drift the hospital was fired by the Zulus, it was almost, if not entirely, the light thus thrown on the scene which led to their discomfiture. Although the light was obtained through no action on the part of the defenders, and at the time the burning of the hospital added to their anxieties, nevertheless, without it, the little garrison must have been rushed in the darkness, and overwhelmed by the vastly superior numbers of the Zulus. It is one of the best instances in history of the importance of light, in meeting a night attack, especially an attack by savages.

Again, during the same war, on 12th March 1879,† an infantry detachment of some 70 men, without any horses, when crossing the Intombi River with a convey of wagons, was held up by a sudden rising of the water, which resulted in the party being divided into two, some of the wagons being on one bank, and some on the other. The only communication between the two parties was by an improvised raft, or by swimming a fairly swift torrent.

The Zulus saw the situation, reconnoitred unseen from adjacent high ground, and collecting in a convenient spot, rushed the camp on one bank at dawn. The position overnight had been a dangerous one, and, though the actual presence of Zulus was not suspected a shot was fired at an indistinct form, believed to be a Zulu, half an hour before the attack took place. Had this apparatus been in use, that shot would have been fired at a Zulu seen distinctly by the light of a flare and bonfire. There is no doubt

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\* Palosin Kach, 1867, N.-W. F., India.  
Wauo 1894 do.

† See narrative of the Field Operations connected with the Zulu War, 1879, page 69.

that the Zulu in question was a scout, ascertaining whether the proposed rush was feasible and likely to be successful. With the flares in use, the scout would have been shot, and possibly there would have been no gathering for a rush. Any way, as a dead Zulu would have been a good hint to get under arms, when the attack came it would have been over ground well lighted up. The surprise would probably have been on the Zulu side.

From the point of view of our enemies, the incidents at Surprise and Gun Hills during the S. African War are two in which the Boers would almost inevitably have defeated our troops had they adopted the simple precaution advocated, in addition to placing the sentries who failed to hear the noise made by the "cutting out" expeditions. It is a curious fact, doubtless well known to many, that the noise made by even a large force of men well disciplined in night operations, can under certain conditions be heard only at a surprisingly short distance at night, although to the men themselves, they appear to be making a noise sufficient to awaken every one for miles round. One word, even a whisper, can be heard a great distance away; a match lit for a second to look at a watch is fatal; but the sounds of footsteps, clink of arms, etc., seem to lose themselves, and to mingle with the hundred voices of the night, which are always in the watcher's ears; and to report them will earn a sentry no thanks should he raise a false alarm. Anything then which will operate automatically outside the radius of a sentry's ken at night, and which will literally throw a light on the subject, may have valuable and far-reaching results. And so it would have been on these occasions. These were no light-hearted expeditions undertaken for the fun of damaging a gun, or of annoying the enemy.

The moral effect on the attackers, due to the unexpected happening at a distance from the objective, must be of use to the defenders. In some experiments quoted later on, the moral effect, even in peace manoeuvres, has been very noticeable.

There were many occasions during the Russo-Japanese War when the one side or the other might, by the use of some flare apparatus, have rendered their position secure, especially when entrenching a position at night, to be defended next day.

At San-kuai-seki-san a Japanese night attack was distinctly indicated, and to a certain extent it appears to have been expected by the Russians; nevertheless very feeble preparations were made to guard against it. Here the flare system on a large scale would have been feasible and invaluable.

It is not too much to imagine that the experience might have caused the Japanese to modify their formations at night, thereby adding to their difficulties as attackers in the dark. The Japanese actually despised the effect of rifle fire at night (the Russian is or was an extraordinarily bad shot by day, and at night the safest place was certainly close in front of him) to such an extent that they were able to reduce the difficulties of leading by adopting close formations; and were able to overwhelm the enemy at night with

large numbers. So any device which will cause the enemy to pay due respect to fire at night, and to open his formations and files to avoid its effects, thereby adds to his difficulties and complicates his plans.

As an illustration of what can be achieved at night in comparison with what one expects of men firing into actual darkness, the following summary of night firing experiments may be of interest (see next page):—

## FLARES.

The full account appeared in this Journal, October 1909.

	Experi- ment.	Type of Target.	No. of Targets.	Range.	Source of Light.	No. of rounds.	Hits.	Time.	No. of men firing.
	(a)	Black wood dum- mies 4' 6" x 2'.	One	50 yds.	One flare and a very small bonfire.	24	12	...	2 or 3
	(b)	Do. ...	One	100 yds.	Flare only: no bonfire ...	15	4	15 secs. ...	3
	(c)	Do. ...	Eight 6 ft. apart.	300 yds.	One flare in a large bon- fire.	55	21	About 1 minute ...	10
1st team	(d)	Falling Iron plates 12 square.	20	300 yds.	Large bonfires, lit by "Pull Flares" from the firing point.	200	13	Magazine fire un- til rounds were expended.	20
2nd do.	...	Do. ...	20	300 yds.	Do. do. ...	200	12	...	20
3rd do.	...	Do. ...	20	300 yds.	Do. do. ...	200	12	...	20
4th do.	...	Do. ...	40	300 yds.	Do. do. ...	200	12	...	20

It will be noticed that the targets chosen were no mere bullet-catchers, painted so as to be easily visible. The night, in experiments a, b and c was inky black, with no moon.

During some recent brigade training and manœuvres the following incidents occurred:—

An infantry brigade was to make a night march, followed by an attack at dawn. The position to be attacked was a long hill, steep at the top, with a long glacis-like slope, well wooded, reaching down to a railway embankment skirting the foot of the hill about 1,100 yards from the steep part. The attackers' plans were quite unknown to the flag enemy, which represented a brigade holding the position. The position of deployment could be fairly well anticipated to be the neighbourhood of the railway embankment, and the guess proved correct. But as the G. O. C. Brigade was known to wish to practise the machinery of the night march, it was not thought advisable to undertake any enterprise with the idea of introducing the unexpected element before the position of deployment was reached. But, unknown to the brigade, the enemy laid a line of trip wire flares about 100 yards on the defenders' side of the railway, with a line of pull flares about 600 yards nearer the position. Here it must be noted that the skeleton enemy consisted of very few men, and therefore the flare system adopted, and the bonfires themselves, were on "skeleton scale," as regards construction, size, siting, distribution, and supervision. At 5-45 A.M. it rained smartly for 10 minutes, and thoroughly wetted every man without a great-coat.

Behind the line of trips were scattered groups of three men each with orders to—

- (1) reset any flare prematurely set off,
- (2) fire on any human being who set a flare off,
- (3) send one man back as soon as they were obliged to retire or could see a line of men by the light of the flares,
- (4) retire slowly, firing as they went.

When the brigade left the position of deployment, the scouts preceding them walked into the trip wire flares, and "the groups" could see the line of men behind them. The groups fired and fell back as ordered, and by their movements the proper moment to pull the large pull bonfire wires could be easily judged. At first these fires gave more smoke than flame owing to the rain, but the heat of the flare speedily overcame the difficulty, and the attacking lines could be well distinguished, especially from the top of the hill, where the whole scene appeared like an illuminated picture.

The relative positions of the trip wire line and of the pull flare line should be noticed. The trip flares on this occasion were so far to the front that owing to the undergrowth, bushes, and trees, the light given by them was of no use to the defenders in the main position firing line. But they could be seen from the top of the hill; they effectually announced the arrival of the enemy; and enabled the groups to state definitely that they had seen the formed lines, behind the scouts. The results obtained by these comparatively scattered and small pull bonfires demonstrate how excellently a field of fire could



be lit up on occasions when fuel is not scarce. On this occasion, dry jowari stalks were chiefly used, of which there was an unlimited supply in the country round about. Firewood was obtained by collecting stray brushwood, but with proper tools and organization a brigade could have collected enough wood in two hours to make bonfires large enough to burn from midnight to dawn. The men occupied in collecting fuel would have had the satisfaction of knowing that they were thereby earning some extra hours of safe repose by night.

The advantage of the apparatus in connection with the bonfires is that all remains in darkness and mystery until a light is automatically brought in use when required.

Another night two squadrons of cavalry were supposed to have been marked down in bivouac after an exhausting day. An infantry regiment was directed to make a night march, and to attack the cavalry at dawn. This situation is similar to a case which took place in manœuvres in England two or three years ago. Then, a mounted brigade resting was marked down, and successfully rushed in the early morning, being completely surprised. The force to which the brigade belonged were deprived of their services for the whole of the next day.

In the case about to be described, the cavalry had no information as to the probable direction of attack, and could only be guided by their reading of the map. The enemy's infantry were known to be to the north-west. An all-round defence with trip and pull flares was arranged, with standing patrols out at suitable points: the enemy's main attack eventually came by a track which led on to the east side of the camp. Its approach was reported in good time by a standing patrol. The column had to debouch from a defile formed by a village, and their scouts walked into trip wires about 300 yards from the perimeter of the cavalry camp, soon after the head of the column had well cleared the village, the tail being still in the defile. The troops following the scouts were very clearly seen by the light of the first trip wire flare bonfires, and were greeted with a heavy fire. They hesitated and then deployed, and as each company came up into line their scouts walked into more trip wires, until their whole front was illuminated. Meanwhile pull bonfires were set off nearer the village, showing up all the troops as they arrived. By the time the deployment was complete, and the line ready to charge, they had been under a heavy and presumably accurate magazine fire at an effective range of about 350 yards, because the scouts set off the trip bonfires, and the deployment took place behind the scouts.

In war, by putting a pull flare in the thatch of a house in the village, the latter could have been set alight on the enemy's side, and this would have further disclosed all their movements without lighting up the cavalry camp.

On the enemy, the flares had two moral effects. At first they produced a period of halt and hesitation. The foremost company

did not feel like taking on the camp by rushing forward alone in column, and consequently at this period offered a very good target. Secondly, the O. C. column was induced to carry out an immediate attack, although the prearranged plan was to deploy and await a simultaneous attack by another force, detailed to advance over some broken ground on the western side of the camp. This party however had strayed, and they finally developed their attack, under similar flare conditions, after the eastern attack had been under heavy fire for a considerable time, and after operations on that side had ceased.

As a result of this experiment the following experience was gained :—

The front to be protected must be divided into sections, each with its own system of trips and pulls, mutually suiting one another. In each section, a special party must be detailed to collect bonfire materials, and they must be made to work hard for some hours, on the understanding that every hour's good work will save them two hour's trying outpost work at night. Every bonfire must have its reserve of material close behind it, and those who are detailed for resetting the fires should be close within reach. Trip wires are best placed well away from the perimeter, if the bonfires are large. Pull flares may then be placed at such places inside or outside the trip wire line, as will best light up the ground, according to its shape. Certain trees make good bonfires as they stand. Groups, of three men each, should be stationed at intervals, armed with flare components, with clear orders as to what they have to do.

The following incident is quoted in support of the contention that there is nothing difficult in the use of the apparatus, and that it can be used by soldiers without the necessity of undue supervision in the field :—

In April 1911, the writer pointed out to an Indian officer on the ground, the places at which there were to be three pull flares, and two sections of trip wires and flares. The whole of the subsequent arrangements were made without any coaching or reminders. The Indian officer told off a pull flare party, two trip wire parties, and two bonfire parties. The pull and trip wire parties each detailed their own loading parties. At 7 P.M. the squadron commander was conducted round the line in the dark, finding everything ready, awaiting the order to "load flares," which was done at a whistle signal. The enemy were expected at about 7-30 P.M. and had never seen or heard of "flares." They had only been warned that an enemy had been sent out, and that they must be prepared to meet any unexpected situation. At about 8 P.M. the first trip flare acted, and all the others in succession. The squadron commander had the three pull wire termini at his feet, and each one duly lit up its bonfire when pulled. As to the result on the attacking infantry, and on the colour-sergeant commanding the company, and as to the remarks of the company commander who was watching to see how his company would meet the unexpected, are they not quite unprintable ?

Objections have been put forward on the grounds that the laying out of the flares takes a long time, and entails a lot of trouble, which in war is not practical. To the first objection the answer is that, for a section thoroughly trained to the use of the apparatus, a period of 20 minutes is sufficient, and in that time everything there is to do can be done, with the exception of the collection of materials for bonfires. The result of using this apparatus is that fewer men are required to keep awake at night for a given frontage, and if a large number of men have got to be employed in collecting materials for bonfires, and in placing spare materials in position for re-making them, it is surely worth while if, as a result of their labours, they obtain rest and security. To the second objection the answer is that after bullets have started humming, nothing is too much trouble; because if the trouble taken repays itself, the advantages are so self-evident that the objection to undergoing the labour disappears. A parallel instance is the question of getting men to dig willingly. In peace manœuvres men will not dig spontaneously. But they are taught how to dig in peace, notwithstanding, and after a little experience of war, history shows us that men become expert miners, and delve on the least provocation.

Finally there is the objection that the apparatus is crude and amateurish. To this the writer suggests that it fulfils its object very fairly efficiently, that it is the best of its kind yet made, and that it is better to use some pattern of a desirable article, than to use nothing on the grounds that the best has not yet been invented.

The habitual use of an imperfect weapon sometimes leads to the production of its rival and successor, which is as it should be.

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Since the above was written, and after the manuscript had been submitted, the writer has seen the 1911 October number of this Journal, entitled "Mechanical Flares" suggesting a modification of his apparatus. Beyond remarking that the point raised has already been noted and successfully dealt with in practice, and without necessarily hailing the proposed modification as a substitute for the former method, the writer does not propose to make any further comment, except that the reflection contained in his concluding paragraph has been very quickly justified.

## MILITARY EDUCATION.

### REPORT ON PROMOTION EXAMINATION, MARCH 1911.

A copy of the Report on the Examination held in India, in March 1911, of—

- (1) **Lieutenants and Captains of the Regular Army, in subjects (d), (e), (h) (lieutenants, R.A.M.C.), (h) (ii) and (iii) (lieutenants, I.M.S.), (i) (lieutenants), and (j) for promotion ;**
  - (2) **Majors of the Regular Army, in Tactical Fitness for Command, Part I ;**
  - (3) **Majors of the Royal Army Medical Corps, in Technical subjects, Part I, Appendix XIV, King's Regulations,**
- has been received from the Director of Staff Duties and Military Training at Army Headquarters, India.

In his covering report the Director says :—"Comparing the results of the examination in subject (d) held in March 1911, with that of November 1910, there is a regrettable increase in the percentage of failures. There is, however, an increase in the percentage of candidates who obtained .75 of the total marks.

2. The percentage of failures among officers who took up all the sub-heads of subject (d) was :—

March 1910	...	...	...	21·57
November 1910	...	...	...	23·17
March 1911	...	...	...	30·3

At the March 1911 examination 5·4 per cent. of officers gained .75 or over of the total marks in subject (d), as compared with 1·47 per cent. in November 1910.

Taking the sub-heads of subject (d) as a whole, the best examination was passed by Lieutenant W. G. Officer, West Riding Regiment, who obtained 1,283 out of a possible 1,600.

3. The increase in the percentage of failures is largely due to the indifferent papers submitted in (d) (i). As this subject, *viz.*, Military Engineering, Tactics, Map Reading, Field Sketching and Reconnaissance, is not only the most important of those comprising the subjects for examination in (d), but is also that in which practical instruction is most easily obtainable, the result can only be regarded as unsatisfactory.

There is reason to fear that the reports on successive examinations are not as widely studied as they should be. These reports include remarks on the papers submitted in the several subjects and are intended to be of assistance not only to future candidates but to those responsible for instruction (*vide* King's Regulations, paragraph 107).

The reports on examinations in India are obtainable from the Superintendent, Government Printing, Calcutta, price Re. 1.

Similar reports on examinations held at Home are obtainable from any of the official publishers, price 1 shilling for examinations up to December 1910 inclusive, since that date 6d. It may be noted that a précised report of the December 1910 examination at Home has been produced in the April 1911 Journal of the R. U. S. I., and that it is proposed to adopt a similar procedure as regards examinations in India, in the *Journal of the U. S. I. of India*.

The examination of Majors in Part I, Tactical Fitness for Command, was for the first time conducted by a specially selected officer for the whole of India instead of being left to divisions.

This system was adopted in conformity with the new rules recently introduced at Home, and in accordance with the general opinion expressed at the General Staff Conference of 1910. It is hoped that this mode of examination will insure a greater uniformity of standard being obtained. Sixty-one officers were examined."

It has been found impossible to reproduce all the remarks of the examiners in the various subjects, but the following extracts should be of interest to all who are either responsible for instruction or themselves are future candidates.

**Lieutenants and Captains of the Regular Army, Lieutenants of the Royal Army Medical Corps and of the Indian Medical Service.**

*Subject D (1)—Military Engineering, Tactics, and Military Topography, Paper 1.*

Question 1 asked candidates to show on the map provided the positions of piquets to protect the camp of a small column engaged in a punitive expedition in country typical of the N.-W. Frontier of India.

"From the General Idea it was evident that all-round protection for the camp at Kalang was necessary (F. S. R., Part I, 1909, paragraph 147). Several candidates quite failed to recognise this essential and took up on the map an outpost front extending along the heights 11,469, 8,068, 7,069, 7,829, and 9,212, thus leaving their flanks and rear entirely exposed to the enterprise of the foe. Yet other candidates went to the other extreme and drew a little ring of piquets about 500 yards distant from the camping ground, thus entirely abandoning the hillsides \* \* \*

The general tendency was to have too few piquets, to make them symmetrically of an equal number of men without paying due regard to their situation or to the work which may be required of them. \* \* \*

Question II (for Captains) asked each candidate, as staff officer to the O. C. the column, for an appreciation and draft orders for the action proposed:—

"The appreciations were mostly very poor. They consisted for the most part of a recapitulation of the detail given in the question and in the general idea.

They rarely showed any understanding of the ground depicted in the map.

Considerations of the time required to climb the hills and carry out an attack over such steep ground were generally omitted, thus leading to impossible orders, for example, requiring a force to climb 3,000 feet in a distance of 5 miles in  $1\frac{1}{4}$  hours, or sending a large portion of the attacking force on a wide turning movement which the foe holding the shorter and easier line on the crest of the hills could easily frustrate.

Little attention was paid to the disposal and protection of the great mass of transport while the enemy's sangars were being carried.

The appreciations not being clear, the resultant plan of action was often also very vague.

The orders *quâ* orders were on the whole concise and well expressed. In some cases 'special instructions' for a detached force were mentioned but were not given."

Question II (for Lieutenants) asked for the orders that should have been issued for the withdrawal of piquets:—

"This question was naturally much affected by the candidate's reply to Question I. Several candidates appear to have mis-read the question and to have timed the withdrawal of their piquets so as to complete the movement at 9 A.M., instead of commencing the withdrawal at that hour.

The principal fault was a tendency to retire without mutual co-operation, and in many cases to use the *nalas* as a road for retirement."

Question III asked for the disposition of a column on the march.—

"In addition to a calculation of the road-space necessary, this question required a consideration of the distribution of the units composing the column, and of the measures for its protection on the march. This was generally done. Some few officers, however, contended themselves with merely drawing a coloured line showing the total length of road-space required, without any detail whatever.

Some candidates assumed that the mules would march in two strings side by side. This is not a 'reasonable assumption' in respect to a hill road.

Generally, the distribution of the units in the column was satisfactory, but the most varied ideas were put forward as to the amount of escort required by 1,500 transport mules. This ranged from one company to two whole battalions.

In this, as in Question I, several officers betrayed ignorance of the composition of a special signalling unit."

Question IV asked candidates to describe how they would repair a bridge, whose central span has been broken, having a gap of 25 feet between two stone piers:—

"In reply to this question every form of bridge known to the Manual of Military Engineering was used by candidates, who, how-

that the Zulu in question was a scout, ascertaining whether the proposed rush was feasible and likely to be successful. With the flares in use, the scout would have been shot, and possibly there would have been no gathering for a rush. Any way, as a dead Zulu would have been a good hint to get under arms, when the attack came it would have been over ground well lighted up. The surprise would probably have been on the Zulu side.

From the point of view of our enemies, the incidents at Surprise and Gun Hills during the S. African War are two in which the Boers would almost inevitably have defeated our troops, had they adopted the simple precaution advocated, in addition to placing the sentries who failed to hear the noise made by the "cutting out" expeditions. It is a curious fact, doubtless well known to many, that the noise made by even a large force of men well disciplined in night operations, can under certain conditions be heard only at a surprisingly short distance at night, although to the men themselves, they appear to be making a noise sufficient to awaken every one for miles round. One word, even a whisper, can be heard a great distance away; a match lit for a second to look at a watch is fatal; but the sounds of footsteps, clack of arms, etc., seem to lose themselves and to mingle with the hundred voices of the night, which are always in the watcher's ears, and to report them will earn a sentry no thanks should he raise a false alarm. Anything then which will operate automatically outside the radius of a sentry's ken at night, and which will literally throw a light on the subject, may have valuable and far reaching results. And so it would have been on these occasions. These were no light hearted expeditions undertaken for the fun of damaging a gun, or of annoying the enemy.

The moral effect on the attackers, due to the unexpected happening at a distance from the objective, must be of use to the defenders. In some experiments, quoted later on, the moral effect, even in peace manoeuvres, has been very noticeable.

There were many occasions during the Russo-Japanese War when the one side or the other, night, by the use of some flare apparatus, have rendered their position secure, especially when entrenching a position at night, to be defended next day.

At San Kian-ski-san a Japanese night attack was distinctly indicated, and to a certain extent it appears to have been expected by the Russians; nevertheless very feeble preparations were made to guard against it. Here the flare system on a large scale would have been feasible and invaluable.

It is not too much to imagine that the experience might have caused the Japanese to imitate their operations at night, thereby adding to their difficulties as attackers in the dark. The Japanese actually disposed the rifle at night, the Russian was an extraordinarily bad shot by day, and at night the worst place was certainly chosen for it, then to such an extent that they were able to reduce the difficulties of laying by adopting close formations, and were able to overwhelm the enemy at night with

large numbers. So any device which will cause the enemy to pay due respect to fire at night, and to open his formations and files to avoid its effects, thereby adds to his difficulties and complicates his plans.

As an illustration of what can be achieved at night in comparison with what one expects of men firing into actual darkness, the following summary of night firing experiments may be of interest (see next page):—



The full account appeared in this Journal, October 1909.

Flare	Type of flare	No. of flares	Range	Source of light	No. of flares	Time	No. of men looking
1	Flare with smoke	One	20 yds	One flare and a very small fire	24	12	2 or 3
2	Flare	One	100 yds	Flare only; no smoke	15	4 15 sec.	3
3	Flare	1 or 2	100 yds	One flare in a large bonfire	55	21 About 1 minute	10
4	Flare with smoke	1	300 yds	Large bonfire, lit by "pull" flares from the firing point	200	13 Magazine fire until flares were expended	20
5	Flare	20	300 yds	Flare	200	12	20
6	Flare	2	300 yds	Flare	200	12	20
7	Flare	4	300 yds	Flare	200	12	20

It was observed that the largest flares were the more brilliant, but were, pointed out as to be easily visible. The bright, inexpensive d. 6 and 100 yds. flares were used.

During some recent brigade training and manœuvres the following incidents occurred:—

An infantry brigade was to make a night march, followed by an attack at dawn. The position to be attacked was a long hill, steep at the top, with a long glacis-like slope, well wooded, reaching down to a railway embankment skirting the foot of the hill about 1,100 yards from the steep part. The attackers' plans were quite unknown to the flag enemy, which represented a brigade holding the position. The position of deployment could be fairly well anticipated to be the neighbourhood of the railway embankment, and the guess proved correct. But as the G. O. C. Brigade was known to wish to practise the machinery of the night march, it was not thought advisable to undertake any enterprise with the idea of introducing the unexpected element before the position of deployment was reached. But, unknown to the brigade, the enemy laid a line of trip wire flares about 100 yards on the defenders' side of the railway, with a line of pull flares about 600 yards nearer the position. Here it must be noted that the skeleton enemy consisted of very few men, and therefore the flare system adopted, and the bonfires themselves, were on "skeleton scale," as regards construction, size, siting, distribution, and supervision. At 5.45 A.M. it rained smartly for 10 minutes, and thoroughly wetted every man without a great-coat.

Behind the line of trips were scattered groups of three men each with orders to—

- (1) reset any flare prematurely set off,
- (2) fire on any human being who set a flare off,
- (3) send one man back as soon as they were obliged to retire or could see a line of men by the light of the flares,
- (4) retire slowly, firing as they went.

When the brigade left the position of deployment, the scouts preceding them walked into the trip wire flares, and "the groups" could see the line of men behind them. The groups fired and fell back as ordered, and by their movements the proper moment to pull the large pull bonfire wires could be easily judged. At first these fires gave more smoke than flame owing to the rain, but the heat of the flare speedily overcame the difficulty, and the attacking lines could be well distinguished, especially from the top of the hill, where the whole scene appeared like an illuminated picture.

The relative positions of the trip wire line and of the pull flare line should be noticed. The trip flares on this occasion were so far to the front that owing to the undergrowth, bushes, and trees, the light given by them was of no use to the defenders in the main position firing line. But they could be seen from the top of the hill; they effectually announced the arrival of the enemy; and enabled the groups to state definitely that they had seen the formed lines, behind the scouts. The results obtained by these comparatively scattered and small pull bonfires demonstrate how excellently a field of fire could

be lit up on occasions when fuel is not scarce. On this occasion, dry jowari stalks were chiefly used, of which there was an unlimited supply in the country round about. Firewood was obtained by collecting stray brushwood, but with proper tools and organization a brigade could have collected enough wood in two hours to make bonfires large enough to burn from midnight to dawn. The men occupied in collecting fuel would have had the satisfaction of knowing that they were thereby earning some extra hours of safe repose by night.

The advantage of the apparatus in connection with the bonfires is that all remains in darkness and mystery until a light is automatically brought in use when required.

Another night two squadrons of cavalry were supposed to have been marked down in bivouac after an exhausting day. An infantry regiment was directed to make a night march, and to attack the cavalry at dawn. This situation is similar to a case which took place in manoeuvres in England two or three years ago. Then, a mounted brigade resting was marked down, and successfully rushed in the early morning, being completely surprised. The force to which the brigade belonged were deprived of their services for the whole of the next day.

In the case about to be described, the cavalry had no information as to the probable direction of attack and could only be guided by their reading of the map. The enemy's infantry were known to be to the north-west. An all-round defence with trip and pull flares was arranged, with standing pencils out at suitable points; the enemy's main attack eventually came by a track which led on to the east side of the camp. Its approach was reported in good time by a standing patrol. The column had to debouch from a defile formed by a village, and their scouts were led into trip wires about 500 yards from the perimeter of the cavalry camp, soon after the head of the column had well cleared the village, the tail being still in the defile. The troops following the scouts were very clearly seen by the light of the first trip wire flare bonfires, and were greeted with a heavy fire. They hesitated and then yielded, and as each company came up into line their scouts were directed to the trip wires, until their whole front was illuminated. Meanwhile pull bonfires were set off nearer the village, showing up all the troops as they arrived. By the time the deployment was complete, and the line ready to charge, they had been under a heavy and prolonged accurate magazine fire at an effective range of about 500 yards, because the scouts set off the trip bonfires, and the deployment took place behind the scouts.

In war, by putting up all this in the track of a horse in the village, the latter could have been started in the enemy's side, and this would have facilitated his own further movements without lighting up the cavalry camp.

On the enemy the effect was even greater. At first they produced a period of panic and hesitation. The first most company

did not feel like taking on the camp by rushing forward alone in column, and consequently at this period offered a very good target. Secondly, the O. C. column was induced to carry out an immediate attack, although the prearranged plan was to deploy and await a simultaneous attack by another force, detailed to advance over some broken ground on the western side of the camp. This party however had strayed, and they finally developed their attack, under similar flare conditions, after the eastern attack had been under heavy fire for a considerable time, and after operations on that side had ceased.

As a result of this experiment the following experience was gained:—

The front to be protected must be divided into sections, each with its own system of trips and pulls, mutually suiting one another. In each section, a special party must be detailed to collect bonfire materials, and they must be made to work hard for some hours, on the understanding that every hour's good work will save them two hour's trying outpost work at night. Every bonfire must have its reserve of material close behind it, and those who are detailed for resetting the fires should be close within reach. Trip wires are best placed well away from the perimeter, if the bonfires are large. Pull flares may then be placed at such places inside or outside the trip wire line, as will best light up the ground, according to its shape. Certain trees make good bonfires as they stand. Groups, of three men each, should be stationed at intervals, armed with flare components, with clear orders as to what they have to do.

The following incident is quoted in support of the contention that there is nothing difficult in the use of the apparatus, and that it can be used by soldiers without the necessity of undue supervision in the field:—

In April 1911, the writer pointed out to an Indian officer on the ground, the places at which there were to be three pull flares, and two sections of trip wires and flares. The whole of the subsequent arrangements were made without any coaching or reminders. The Indian officer told off a pull flare party, two trip wire parties, and two bonfire parties. The pull and trip wire parties each detailed their own loading parties. At 7 P.M. the squadron commander was conducted round the line in the dark, finding everything ready, awaiting the order to "load flares," which was done at a whistle signal. The enemy were expected at about 7-30 P.M. and had never seen or heard of "flares." They had only been warned that an enemy had been sent out, and that they must be prepared to meet any unexpected situation. At about 8 P.M. the first trip flare acted, and all the others in succession. The squadron commander had the three pull wire termini at his feet, and each one duly lit up its bonfire when pulled. As to the result on the attacking infantry, and on the colour-sergeant commanding the company, and as to the remarks of the company commander who was watching to see how his company would meet the unexpected, are they not quite unprintable?

Objections have been put forward on the grounds that the laying out of the flares takes a long time, and entails a lot of trouble, which in war is not practical. To the first objection the answer is that, for a section thoroughly trained to the use of the apparatus, a period of 20 minutes is sufficient, and in that time everything there is to do can be done, with the exception of the collection of materials for bonfires. The result of using this apparatus is that fewer men are required to keep awake at night for a given frontage, and if a large number of men have got to be employed in collecting materials for bonfires, and in placing spare materials in position for re-making them, it is surely worth while if, as a result of their labours, they obtain rest and security. To the second objection the answer is that after bullets have started humming, nothing is too much trouble; because if the trouble taken repays itself, the advantages are so self-evident that the objection to undergoing the labour disappears. A parallel instance is the question of getting men to dig willingly. In peace manoeuvres men will not dig spontaneously. But they are taught how to dig in peace notwithstanding, and after a little experience of war, history shows us that men become expert miners, and delve on the least provocation.

Finally there is the objection that the apparatus is crude and amateurish. To this the writer suggests that it fulfils its object very fairly efficiently, that it is the best of its kind yet made, and that it is better to use some pattern of a desirable article than to use nothing on the grounds that the best has not yet been invented.

The habitual use of an imperfect weapon sometimes leads to the production of its rival and successor, which is as it should be.

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Since this review was written, and after the manuscript had been submitted, the writer has seen the full description of this apparatus, printed in the *Journal of the Royal Artillery*, and has been struck by the many good remarks that it contains. It is also very interesting and successfully dealt with in the *Illustrated London News*, and in the *War Illustrated*. The writer does not propose to make any further remarks, except that the criticism contained in his concluding paragraph has been very judiciously dealt with.

## MILITARY EDUCATION.

### REPORT ON PROMOTION EXAMINATION, MARCH 1911.

A copy of the Report on the Examination held in India, in March 1911, of—

- (1) **Lieutenants and Captains of the Regular Army**, in subjects (*d*), (*e*), (*h*) (lieutenants, **R.A.M.C.**), (*h*) (ii) and (iii) (lieutenants, **I.M.S.**), (*i*) (lieutenants), and (*j*) for promotion ;
- (2) **Majors of the Regular Army, in Tactical Fitness for Command, Part I ;**
- (3) **Majors of the Royal Army Medical Corps, in Technical subjects, Part I, Appendix XIV, King's Regulations,** has been received from the Director of Staff Duties and Military Training at Army Headquarters, India.

In his covering report the Director says :—“ Comparing the results of the examination in subject (*d*) held in March 1911, with that of November 1910, there is a regrettable increase in the percentage of failures. There is, however, an increase in the percentage of candidates who obtained 75 of the total marks.

2. The percentage of failures among officers who took up all the sub-heads of subject (*d*) was :—

March 1910 ...	...	...	...	21·57
November 1910 ...	...	...	...	23·17
March 1911 ...	...	...	...	30·3

At the March 1911 examination 5·4 per cent. of officers gained 75 or over of the total marks in subject (*d*), as compared with 1·47 per cent. in November 1910.

Taking the sub-heads of subject (*d*) as a whole, the best examination was passed by Lieutenant W. G. Officer, West Riding Regiment, who obtained 1,283 out of a possible 1,600.

3. The increase in the percentage of failures is largely due to the indifferent papers submitted in (*d*) (i). As this subject, *viz.*, Military Engineering, Tactics, Map Reading, Field Sketching and Reconnaissance, is not only the most important of those comprising the subjects for examination in (*d*), but is also that in which practical instruction is most easily obtainable, the result can only be regarded as unsatisfactory.

There is reason to fear that the reports on successive examinations are not as widely studied as they should be. These reports include remarks on the papers submitted in the several subjects and are intended to be of assistance not only to future candidates but to those responsible for instruction (*vide* King's Regulations, paragraph 107).

The reports on examinations in India are obtainable from the Superintendent, Government Printing, Calcutta, price Re. 1.

Similar reports on examinations held at Home are obtainable from any of the official publishers price 1 shilling for examinations up to December 1910 inclusive, since that date 6d. It may be noted that a precisèd report of the December 1910 examination at Home has been produced in the April 1911 *Journal of the R. U. S. I.*, and that it is proposed to adopt a similar procedure as regards examinations in India, in the *Journal of the U. S. I. of India*.

The examination of Majors in Part I, Tactical Fitness for Command, was for the first time conducted by a specially selected officer for the whole of India instead of being left to divisions.

This system was adopted in conformity with the new rules recently introduced at Home and in accordance with the general opinion expressed at the General Staff Conference of 1910. It is hoped that this mode of examination will insure a greater uniformity of standard being obtained. "Sixty-one officers were examined."

It has been found impossible to reproduce all the remarks of the examiners in the various subjects, but the following extracts should be of interest to all who are either responsible for instruction or themselves are future candidates.

**Lieutenants and Captains of the Regular Army, Lieutenants of the Royal Army Medical Corps and of the Indian Medical Service.**

*Subject D (1) – Military Engineering, Tactics, and Military Topography, Paper I.*

Question I asked candidates to show on the map provided the positions of pickets to protect the camp of a small column engaged in a punitive expedition in country typical of the N.-W. Frontier of India.

From the General Map it was evident that abundant protection for the camp at Kaurag was necessary (F. S. R., Part I, 1909, paragraph 147). Several candidates quite failed to recognise this essential and took up on the map an outpost front extending along the heights 11469, 8068, 7060, 7829, and 19212, thus leaving their flanks and rear entirely exposed to the enterprise of the foe. Yet other candidates went to the other extreme and drew a little ring of pickets about 500 yards distant from the camping ground, thus entirely abandoning the hillsides.

The general tendency was to have too few pickets, to make them asymmetrically of an equal number of men without paying due regard to their situation or to the work which may be required of them.

Question II for Captains asked for a plan of defence as stated over to the O. C. the command, from an approach in a direction others for the action proposed.

The approaches were mostly very poor. They consisted for the most part of a repetition of the detailing given in the question and in the general idea.

They rarely showed any understanding of the ground depicted in the map.

Considerations of the time required to climb the hills and carry out an attack over such steep ground were generally omitted, thus leading to impossible orders, for example, requiring a force to climb 3,000 feet in a distance of 5 miles in 1½ hours, or sending a large portion of the attacking force on a wide turning movement which the foe holding the shorter and easier line on the crest of the hills could easily frustrate.

Little attention was paid to the disposal and protection of the great mass of transport while the enemy's sangars were being carried.

The appreciations not being clear, the resultant plan of action was often also very vague.

The orders *quâ* orders were on the whole concise and well expressed. In some cases 'special instructions' for a detached force were mentioned but were not given."

Question II (for Lieutenants) asked for the orders that should have been issued for the withdrawal of piquets:—

"This question was naturally much affected by the candidate's reply to Question I. Several candidates appear to have mis-read the question and to have timed the withdrawal of their piquets so as to complete the movement at 9 A.M., instead of commencing the withdrawal at that hour.

The principal fault was a tendency to retire without mutual co-operation, and in many cases to use the *uhalas* as a road for retirement."

Question III asked for the disposition of a column on the march.—

"In addition to a calculation of the road-space necessary, this question required a consideration of the distribution of the units composing the column, and of the measures for its protection on the march. This was generally done. Some few officers, however, contended themselves with merely drawing a coloured line showing the total length of road-space required, without any detail whatever.

Some candidates assumed that the mules would march in two strings side by side. This is not a 'reasonable assumption' in respect to a hill road.

Generally, the distribution of the units in the column was satisfactory, but the most varied ideas were put forward as to the amount of escort required by 1,500 transport mules. This ranged from one company to two whole battalions.

In this, as in Question I, several officers betrayed ignorance of the composition of a special signalling unit."

Question IV asked candidates to describe how they would repair a bridge, whose central span has been broken, having a gap of 25 feet between two stone piers:—

"In reply to this question every form of bridge known to the Manual of Military Engineering was used by candidates, who, how-



ever, rarely gave any reason for their choice. Under the given conditions the simplest form of bridge would appear to be that using a single four-legged trestle in the centre or, better still, two two-legged trestles dividing the gap into three bays of 8 feet each."

Question V was on 'visibility':—

"Satisfactory answers to this question were very rare. Three rough sections from the sentry's post through the given points would at once have given the candidates a general idea as to what ground was visible by the sentry. This with the fact that the reverse slopes of hills behind a crest line must be invisible would have sufficed to give a much better answer than any given."

In Paper II, the first six questions and the remarks of the examiners on candidates' answers to each were as follows:—

*Question 1.*—In reconnoitring a position, with a view to attack, what are the several points on which you would endeavour to obtain information?

"This question was generally well answered (F. S. R., Part I, paragraph 96-1). Some candidates appeared, however, to expect to be able to obtain information during this preliminary reconnaissance on such points as the position of the enemy's reserves, of his artillery, the strength of the garrison of his entrenchments, etc., which would usually only be obtainable after a great deal of close fighting."

*Question 2.*—In arranging a night operation for a small force, what are the various points you must bear in mind, in order to secure success from the preliminary night-march to the final assault?

"All that was here required was a short précis of the contents of Chapter IX, F. S. R., Part I. Most candidates simply jotted down a number of points, without any definite idea of their relative importance. In many cases there was considerable confusion of idea between the 'position of assembly' and the 'position of deployment.'"

*Question 3.*—What are the general principles by which you must be guided when entrenching a position, however small?

"(Manual of Military Engineering, paragraph 1, and F. S. R., Part I, pages 124-126.) This question was also, on the whole, well answered, but several candidates lost themselves in details as to the depth and drainage of trenches, and such like matters of detail."

*Question 4.*—What are the conditions which govern the effective use of obstacles in the defence of a position?

"(Manual of Military Engineering, paragraph 93). Here again candidates wandered into detail regarding the method of construction, material and time necessary to make, etc., individual forms of obstacles, such as abatis and high wire entanglement."

*Question 5.*—A column is marching through an enemy's country and halts on the bank of a stream, over which is a bridge 150 yards long. You are informed that you will be left behind, when the column marches next morning, to secure the bridge with a detachment of 50 rifles. You are ordered to indent for the tools you will want to entrench your position. No explosives are available.

The soil is frozen so hard as to be unworkable. The country is a plain thickly covered with loose rounded water-worn smooth stones. The river-bed is full of reeds, and on one bank is a considerable copse of straight, stout saplings.

The inhabitants are poorly armed with muzzle-loading guns and *jingalls*, and have no artillery.

Give a sketch, and describe the work you would undertake to secure your detachment, and state what tools you would indent for?

"This question was adapted from an actual instance during the last war in Tibet. The simplest solution is a blockhouse with walls made of continuous hurdle work in two lines filled in with the smooth round stones and roofed with saplings and reeds, or with tent canvas if available. The supporting saplings of the walls must be driven into holes made in the frozen soil with crowbars or pick-heads. Loopholes of similar basket work should be inserted in the walls when being made.

Smooth round stones will not build into effective walls or sangars without some binding material.

Officers indented for large quantities of sandbags, lashings, barbed wire, corrugated iron sheets and other such material as is not usually procurable in the field (Manual of Military Engineering, paragraphs 109-110)

Most candidates divided the small force at their disposal into two equal parts and posted one portion at each end of the bridge. Concentration of force at one end with a small piquet post at the other end would appear to be more advisable.

Several officers appear to have taken their ideas for the defence of this bridge from the solution in 'Duffer's Drift,' without taking into consideration the differences in armament and tactics between the Boers and the inhabitants of the country described in the question.

For a complete solution of this problem protection from the weather by some arrangement of hutting was essential (Manual of Military Engineering, paragraphs 191-197)."

*Question 6.*—Give the conventional signs representing a railway, a tunnel, a cutting, a metalled road, an unmetalled road, a heath, a fine wood, a marsh, a flying bridge, a footpath.

"Not one single candidate was correct in all ten of the conventional signs asked for."

*Question 7* was a simple question in scales, on the whole well and correctly done.

*Question 8* was a simple plotting question. "Many candidates neglected the magnetic variation given. The terms south, east, and west refer of necessity to the true north, the bearings to the magnetic north."

#### *Subject D (II)—Military Law.*

The examiner remarks that the results were, on the whole, good, the proportion of failures being low. The question which appears

to have given most trouble was one in which a charge sheet, finding, and sentence, had to be correctly framed for a crime of theft of goods from a civilian by three soldiers.

The examiner, with reference to other questions, says :—

“ Among the Indian Army candidates there is still a good deal of uncertainty as to the difference between an ‘ assault ’ and a ‘ use of criminal force. ’ The former is a ‘ gesture or preparation ’ made ‘ intending or knowing it to be likely that such gesture or preparation will cause any person present to apprehend that he who makes that gesture or preparation is about to use criminal force to that person, ’ *e.g.*, a threatening gesture (see definition in Appendix to I. A.W.), while the latter is an actual use of force, *e.g.*, a blow, Sepoy A’s act was almost invariably described as an assault, which it was *not*.

There was, in some cases, a tendency to copy long extracts from the book. This was especially marked in the answers to the questions regarding ‘ hearsay. ’ A candidate who deals in such extracts only shows that he knows where to find the answer, a good thing in itself but not so important as showing that he understands it when found. A few lines in a candidate’s own words, with some examples of his own, showing that he understands the points involved are worth many pages of *verbatim* extracts from the M.M.L.”

The following question and the remarks thereon are given in full :—

Quartermaster-Sergeant A (staff clerk) is charged with fraudulently misapplying Government money entrusted to him in his official capacity, and with desertion. He was arrested in Calcutta taking his passage for Australia under an assumed name. At his trial the prosecutor proposes to call witnesses to “ put in ” the following documents for the purpose indicated against each. Counsel for the defence objects. Discuss their admissibility, and if any further information is required to enable the Court to decide upon this point, indicate its nature. How can the entries referred to in (d) be proved to have been made by accused ?

*Documents proposed to be “ put in ” and object of each—*

- (a) Descriptive return signed by the Presidency Magistrate, Calcutta, to show how Quartermaster Sergeant A was dressed when arrested.
- (b) Letter from the Commissioner of Police, Calcutta, as to the circumstances of his arrest.
- (c) Office copies of certain letters which were prepared by accused, and sent out in ordinary course, to prove that these letters contained certain statements. The clerk who made the copies is prepared to swear to their accuracy.
- (d) Entries made by accused in books of account which show various sums as received by him, to prove his receipt of these sums.

"This was, on the whole, answered fairly well, but as few candidates were right as to all the documents, the correct answers to each may be indicated for their future guidance." Any one of these documents may easily come before a court-martial—

- (a) was admissible, see A.A. 163 (i) and schedule on page 446 of M. M. L.;
- (b) was inadmissible as "hearsay";
- (c) would be admissible only if the originals were not available for any of the reasons given in M. M. L., VI 35 (a) to (c). The clerk can then "put in" the copies and swear to their accuracy;
- (d) were admissible, see note (a) on page 73 of the M. M. L. As to how handwriting can be proved, see M. M. L. VI 67."

*Subject D (III)—Administration, Organization, and Equipment.*

The examiner, in the course of his remarks, says the paper was a very easy one. He also mentions that many candidates have very little idea of the composition of an Indian division. The one question which was badly answered was:—"How many camels would be required to move your unit at field service strength, with a total of 6 days' food for men and 3 days' grain for animals, on summer scale without tents? What road-space would the transport occupy in single file on an indifferent track, and what pace might they be expected to move at? (calculations should be included in the answer.)" The examiner says—"Candidates should be able to work out a simple transport problem of this sort when they have their Field Service Manuals by them. Some of the answers were extremely difficult to follow or check, and candidates do not know what a 'tabular statement' should be. The rations for transport animals and their attendants were often omitted. The British Service candidates often put down the officer's ration at  $3\frac{1}{2}$  lbs. a day and the soldier's at  $1\frac{1}{2}$  lbs. The former is the ration weight with tinned meat, and the latter with meat on the hoof. It is frequently necessary for officers—especially in the Indian Army—to work out problems of this kind on service or manœuvres, and they ought to be able to do it without any difficulty."

*Subject D (IV)—Military History, Part 1.*

- (a) The operations in the eastern theatre of the American War of Secession from the commencement of hostilities to 5th March 1862 inclusive.

Two questions, one on the limitations and advantages of the command of the sea, the other on the influence of railways and telegraph on strategy, produced poor answers. The examiner says that in the first the limitations of sea-power were seldom mentioned in the answers, nor was due weight given to the advantages which attend initiative and power of surprise, the most powerful weapons of command of the sea. In the second, no candidate realised the

extent to which the Federal Army of the Potomac under McDowell, McClellan, Pope, Burnside, and Hooker was tied to the railway *when not within a few miles reach of a base on the sea coast.*

(b) The Russo-Turkish War, 1877-78.

Answers to three out of the five questions were generally satisfactory but, the answers to the question : "Discuss the comparative advantages and disadvantages of the strategical offensive and defensive, and illustrate your remarks from this campaign" were very weak.

"Candidates did not realise the numerically weakening effect of the offensive when it involves invasion, nor the corresponding increase in strength of the defensive."

In the answers to the question calling for a criticism of the strategical rôle allotted to Gourko's advanced guard and the conceptions which led to its employment, the examiner says, it was seldom realised that the conception of the advanced guard was in itself sound, but, as in the case of the whole Russian plan of campaign, its comparative failure was due to the insufficiency of the Russian forces in the decisive theatre of operations.

2nd Paper. (a) The Shenandoah Valley campaign from April 1861 to June 1862 inclusive, "The answers were generally disappointing."

(b) The operations round Plevna (including those at Lovcha and on the Plevna-Sophia road) from 18th July to 10th December 1877.

Question 2 of this paper asked on what conditions does the strategical value of a fortress or a group of fortresses depend? It may be said that Plevna usurped the functions of the Quadrilateral. How was this?

"In answering this, most candidates just missed the pith of the question. It was not realised that Plevna usurped the functions of the quadrilateral, simply by reason of the offensive momentum of Osman Pasha's force as displayed in his forced march from Widin to Plevna, and the effect this move produced on the Russian plans. This effect was increased by the failure of the Russian tactical offensive movements. On the other hand, the Turkish forces in the quadrilateral showed no such offensive mobility; hence they could be masked. Osman Pasha's force was therefore the decisive factor, until it too proved itself unfit for a tactical offensive, and thus impotent to gain decisive results.

Two questions dealt with the principles governing the tactical employment of the various branches of the army.

The examiner remarks on those that, in spite of having General Langlois' exhaustive criticism of the tactics at the battle of Plevna, candidates failed to answer these questions satisfactorily. It is evident that the tactics of the actions in the special campaign are not studied in the light of Field Service Regulations, Part I.

In the answers to the last question of the paper, it is remarked that the principles governing the use of a detachment were not well understood.

The report on the history papers concludes as follows :—

"The general standard of the answers in the Russo-Turkish War papers was above that in either of the papers in the examination of November 1910. Decided opinions were more freely expressed, criticism was less weak, and answers were more logically arranged.

"This is attributable to the books which were available, *viz.*, Major Maurice's History of the Russo-Turkish War, and the translation of General Langlois' "Lessons from two recent wars." It is true that the questions were largely set from these books. Still both these writers confine themselves to military criticism. On the other hand, Colonel Henderson's "Stonewall Jackson," the book mostly read for the American civil war campaign, is a "history" as well as a character study of a single man. Hence to arrive at the bare facts and at military criticism when reading the former two books no careful study is required, while with the latter work much reading and noting are necessary.

"The literary value, accuracy, and style of Colonel Henderson's work is beyond criticism. Still its very trenchancy and attractive style appears to lead to superficial study. The candidate who reads and does not study is caught by the titles of the pages, and for this reason answers to questions on this campaign too frequently abound in ill-judged sarcasm at the expense of Federal generals in place of criticism. The catch-headings at the top of its pages, *i.e.*, "Banks alarmed," "Banks electrified," are frequently reproduced.

"The conclusion is that the majority of candidates read but do not study. Their minds receive a general and superficial impression from the book they read. So that a book which will arrange their thoughts and provide ready-made criticism and conclusions will give the best results at an examination.

"Except in a few cases, and when candidates had read General Langlois' book, it was as evident as in the last examination that the tactics of the special periods had not been studied in conjunction with Field Service Regulations.

"As in the examination held in November 1910, so in this examination candidates showed lack of method in answering questions. Skeletons of proposed answers were seldom made.

"The answers to both the first papers showed that candidates, beyond reading an account of the campaign, seldom trouble to read a general book on strategy. This causes the answers to general strategy questions to be weak.

"Similarly from the answers to the purely tactical questions in both the second papers it was clear that the accounts of the battles of the special periods are not read in conjunction with Field Service Regulations, Part I. Candidates thus miss the principal tactical lessons.

"If they tried to see how the principles of these regulations were illustrated by the tactics employed, and how success or failure was the result of observance or neglect of these principles, their study would be more valuable."

There are no remarks on the papers of subject E or H (lieutenants, R.A.M.C.) or I (lieutenants, A.V.C.), but in H. (lieutenants, I.M.S.) the examiner draws attention to the ignorance displayed of the present organization of Army Bearer Corps and of the duties of Hospital Store-keepers.

In subject J.—Sanitation the examiner says:—

“The paper set was so straightforward, that it was difficult for candidates, if they knew anything at all, to submit bad papers. The results as a whole are good. The one blot on the answers was the reply to Question 3 [which asked what was understood by the expression ‘latrine management,’ and what method was carried out in the candidate’s own corps.] Here was a practical matter, coming within the daily cognisance of every officer, or which certainly should do. In not a single case has a candidate any real knowledge of how the latrines in his own corps are managed. It discloses a very regrettable state of affairs, and had this question been marked with any severity, at least half the candidates would have been classed as ‘failed.’ In future a higher standard of practical acquaintance with practical sanitary details will be expected of candidates. Too much reliance is placed on mere theoretical knowledge.”

### **Majors of the Regular Army, in Tactical Fitness for Command, Part I.**

The paper included the usual general and special idea and candidates were asked to give (i) an appreciation, (ii) the action proposed, and (iii) orders necessary for the execution of the action proposed.

The examiner’s remarks are given *in extenso*:—

#### **APPRECIATION.**

“It is a principle that in the preparation of an appreciation, the writer should keep before him the fact that the object is not merely to put on paper, as requiring consideration, all the points suggested in Section 13, Training and Manœuvre Regulations, 1909, but only to include factors which may be held to influence the issue, and then to endeavour to group these factors to see what is the general drift of the conclusions to which they lead.

Nevertheless, in many of the papers, this principle was lost sight of.

A proportion of the candidates recorded a number of facts, more or less influencing the result, but made no attempt to follow out an argument, so as to consider as many different views as possible of the issues open to both sides.

It is hardly necessary to say that no force can determine for itself or know beforehand absolutely what will be the field or the hour of battle. Certain appreciations, however, were thought out entirely on the lines that the enemy would assuredly take up a particular position and maintain a defensive attitude in it. By thus devising a plan of action for the enemy, and laying down with certainty where and how his force must act, the main difficulty to be contended with

in any tactical problem was got over, in a manner no doubt pleasing to the candidate, but not to the examiner. Some candidates even went so far as to issue precise orders for the attack of the position they had decided on, which, needless to say, might or might not be held.

Instances also occurred of possibilities of action being overstrained in their consideration. To quote examples— Red cavalry and artillery certainly could not reach Sohna before, and be in a position to successfully oppose Blue. Yet this view was held by more than one candidate. There were also schemes devising the employment of village carts to carry infantry, and the use of gun limbers for the same purpose.

Now one of the dominant factors in the scheme may be said to be the uncertainty, at 8-15 A.M. on the 7th March, of the strength of the Blue column on the Bhundsi-Silani Road. It could not be safely reckoned by the Red commander that reinforcements, either by rail or road, had not reached Gurgaon after 10 P.M. the previous night. Thus, it is evident that on the morning of the 7th March, the Blue commander faced his opponent without any approach to a complete knowledge of the strength or composition of the force opposed to him. Without going into detail, it may be said at once that only a very limited number of officers took into account the need for supplementing the information already acquired; the bulk of the candidates accepted as final the strength of the enemy given in message No. 73, from the divisional headquarters.

Again, a commander who would arrive at a useful conclusion of what his opponent is likely to do, must put himself in his place, must realise the conditions under which his decisions are likely to be formed, and the courses open to him. Very few of the candidates apparently did this thoroughly, many of them seemed to shape their own conclusions without giving the Blue commander credit for any military capacity. It is satisfactory to note, however, that all the candidates, without exception, understood the value of the initiative and of a "vigorous offensive."

#### PROPOSED ACTION.

"In general terms, it may be noted that the majority of officers decided on a definite plan of action while still uncertain of their opponents' movements and strength. The vital necessity of obtaining all possible information of what the enemy was doing, before coming to a final decision, was the central fact in the problem, and this the bulk of the candidates failed to keep in view. No doubt the information furnished from divisional headquarters and by the Blue patrol threw light on the general situation, but did not suffice as the groundwork for a definite plan. It might be well supposed that by the time Silani was reached, further reports with regard to the enemy would have come in, and that it would be less difficult to realise the situation here than before starting from Jaundapur.

Comparatively few candidates, however, made their arrangements for attacking the enemy dependent on the situation as it might be disclosed to them at Silani.



Only one candidate decided to make an attempt to obtain fuller information of what was happening behind the dust on the Silani-Bhunds Road, and whether reinforcements had reached Gurgaon during the night.

A large number of candidates decided to employ a small portion of their force to delay the march of the enemy on the Silani-Bhunds Road, while they threw their main body against the Sohna column.

In this plan there was an element of danger; the strength of the Blue column it was intended to detain was unknown; in any case it was stronger than the couple of companies or  $\frac{1}{2}$  battalion of infantry with a section of artillery, the force usually selected to oppose it. Moreover, the ground near Sohna offers difficulties to the attack, the bulk of the Red force might easily find itself heavily engaged and then be "taken tactically" between the two Blue columns.

Speaking generally, it is to be noted that some of the principles contained in Chapter VI, Field Service Regulations, Part I, Operations, 1909, were not applied, and that very few officers decided to defer forming a plan of action, other than a move to Silani, until they had obtained further information from patrols or scouts.

#### ORDERS.

"In alluding to the orders issued, it may be said that the general rules regarding the form, heading, date, place, hour and mode of issue, arrangement of paragraphs, and so on, laid down in Chapter II, Field Service Regulations, Operations, 1909, were attended to.

Too frequently, however, officers apparently forgot to place themselves in the position of the recipient of their orders; had they done so, omissions would have been discovered, and in some instances details omitted which tended to cramp the free action of subordinates.

The faults most noticeable were, not fixing a "starting point" for the columns, not mentioning the source of information usually given when describing the situation in the opening paragraph, looking too far ahead in stating intentions, making no allusions whatever to the services of maintenance.

In paragraph 4, Section 101, Chapter VII, Field Service Regulations, Part I, Operations, 1909, it is recommended that commanders of columns, when an encounter with the enemy is anticipated, should be well forward, usually with the advanced guard. Only one officer remembered this. Nor can any reason be adduced why it would be disadvantageous to put a proportion of guns with the advanced guard yet, in a very large number of the orders, the whole of the battery was kept with the main body."

There were no remarks on the papers for Majors R.A.M.C. in technical subjects 1 and 2. In the subject 3, however, the examiner mentions that candidates showed that they had a very good general knowledge of their work, but that they were somewhat wanting in detail.

## REVIEWS.

*Prevention of Disease and Inefficiency, with special reference to Indian Frontier Warfare.* By Lieut.-Colonel Patrick Hehir, I.M.S., Pioneer Press, Allahabad, 655 pp.

Lieutenant-Colonel Hehir has written an extremely comprehensive book on this subject, which is well worth adding to the library of all regiments serving in India.

He treats in great detail of all questions relating to the health of armies in peace and in war, giving statistics as to the varying losses from disease and wounds in different campaigns all over the world, and emphasising the fact that disease is infinitely more to be feared than the bullet or bayonet. He clearly demonstrates the great strides that sanitary science has taken of recent years and the paramount importance of strictly enforcing sanitary laws in order to obtain success to the field. He shows how in recent campaigns, when strict attention has been paid to sanitation, the loss to armies of huge numbers of men from disease has been avoided, and he contrasts our large losses from this cause in Tirah, etc., with the small losses of the Japanese in Manchuria, where a most elaborate system of sanitation was practised.

In this book the following subjects are very fully dealt with :—The climate of India and how its bad effect are to be combated; recruiting; marching; preparation for an expedition; water-supply; ventilation; food; barrack sanitation; sanitation of cantonments and camp; personal hygiene; clothing; infectious disease and disinfection; all the chief diseases met with in India; the sanitary service in Indian frontier warfare; and statistics of disease, wounds, etc., in Indian frontier campaigns.

It is notorious that in the past the preaching of the value of sanitation and its practice have been regarded as irksome and have been neglected by both officers and men. That sanitation should suddenly become popular and its enforcement easily accepted is not to be expected, but its tremendous importance from a purely military point of view—success in war—is acknowledged in the army of every civilised nation. The details of its application to the army in India are clearly set forth by Lieutenant-Colonel Hehir and it is only by the widespread diffusion of such knowledge that we can hope to get all officers to understand the necessity for strict observance of sanitary laws and obtain the routine and willing obedience of their men, in cantonments, and manœuvres, and on service.

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*My Experiences at Nanshan and Port Arthur with the Fifth East Siberian Rifles.* By Lieut.-General N. A. Tretyakov. Translated by Lieut. A. C. Alford, R.A., London, Hugh Rees, 1911.

General Tretyakov has given us a plain tale of duty nobly performed by a gallant regiment under adverse circumstances. Not

the least fascinating feature of the book is the almost complete absence of criticism of superiors, though the occasions for such criticisms are not wanting. The author has realised that, in publishing the experiences of his regiment, it was only necessary to take facts as they were, and not as they might have been. When we remember that those superior officers, whose conduct of operations is open to question, were subsequently tried and convicted by court-martial, we cannot but agree that General Tretyakov in refraining from criticism has been well advised. The immediate effect of the restraint in this respect is that the many gallant deeds of the Russian troops are clearly depicted, while the attention of the reader is not distracted by those personal recriminations which might so easily have marred a work of this description.

The author, as Colonel of the Fifth East Siberian Rifles, took part in the operations on the Kuantung Peninsular from the outbreak of the Russo-Japanese war to the fall of Port Arthur. He gives a graphic account of the battle of Nanshan, where his regiment had to bear the brunt of the day. We are given an insight into the circumstances which led to the comparatively easy capture of this strong position by the Japanese: The 5th E. S. R., with some detachments, was alone engaged, though three other regiments were within easy reach; artillery was inadequate; ammunition was short; and trenches were unoccupied. Further, there was indecision in the superior control. Colonel Tretyakov was in actual command on the hill and he understood that the defence was to be stubborn. It was only at 4 P.M., when the battle was almost over, that he received a note from General Fock, from which it was clear that that officer's intention was *not* to hold the hill. General Tretyakov's comment—"There cannot be two commanders in one part of a field of battle, and we had three—General Fock, General Nadyein, and myself," clearly indicates one of the main causes of the Japanese victory.

General Tretyakov was given command of a section of the western defences of Port Arthur, under Colonel Irman. His section included 203 Metre Hill, Namako Yama and Akasaka Yama, and he was in personal command on 203 Metre Hill from November 28th until he was severely wounded on the eve of its capture by the Japanese.

While the account of the author's experiences throws many interesting sidelights on the history of the siege of Port Arthur, its chief value lies in the lesson to be learnt of the powers and limitations of brave men under the strain of severe and almost continuous fighting. To those who are apt to study strategy and tactics as if they were exact sciences, and who forget that the bed-rock on which they both rest is the *moral* and power of endurance of the men, General Tretyakov's work is a useful corrective. It is alive with human interest, and we are given a picture of war as seen by the man in the ranks.

Useful lessons are also to be learnt from the author's comments on such matters as the importance of organization, of unity of com-

mand and of co-operation between arms. His remarks on the value of brave and highly trained officers deserve to be widely read:—"A good officer stands for much in battle, just as a bad one may cause irreparable harm." Then, after giving his views on the training of officers, he concludes:—"A really talented officer is priceless, but such a man is a hundred times more rare than a talented painter, professor, or other civilian"—(p. 263). Of special interest are the opinions given of the fighting value of the Japanese:—"It is absurd to credit them with exceptional knowledge and skill in military science. Neither do I acknowledge that they are exceptionally brave, in which opinion my riflemen agree with me. The Japanese are very cautious, and they have no reason to boast of their daring. True, they attack without flinching, for this there are many reasons: first of all their initial success; secondly, the numerical inferiority of our garrison, and, thirdly, the fact that they may be peppered with shrapnel if they do not advance"—(p. 264). We cannot agree with this opinion. The gallantry displayed by the Japanese on many occasions was beyond praise, and that this gallantry so often spent itself in vain against the Russian defences reflects the greater honour on the soldiers of the Czar. The question of the valour of both armies is aptly summarised in our official history of the war—"The countries which produce the heroes of Port Arthur may well be proud of their sons."

Officers will find in General Tretyakov's book much that will give them food for thought and much that will be of value to them in training their men for war.

In future editions of the work it would be advantageous to make some slight alterations in the maps, *e.g.*, in map 4, the names might well have been printed on the map in English and not only in the margin.



# UNITED SERVICE INSTITUTION OF INDIA

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APRIL, 1912.

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## SECRETARY'S NOTES.

### I. PRESENTATION TO THE INSTITUTION BY THEIR IMPERIAL MAJESTIES.

Before leaving India, Their Imperial Majesties graciously presented signed photogravures of themselves to the Institution.

The following letter announcing the gift was received from Commander Sir Charles Cust, K.C.V.O. :—

KING EMPEROR'S CAMP.

INDIA :

6th January 1912.

"DEAR SIR,

I am commanded by the King-Emperor and the Queen-Empress to send you, for the United Service Institution, Simla, a pair of photogravures.

It is Their Imperial Majesties' desire that they should be hung in a conspicuous position, which no doubt your Committee will be able to select.

If they arrive on or before Wednesday, 10th January, I shall be obliged if you will acknowledge their receipt by telegram addressed to Sir Charles Cust, H.M.S. *Medina*, Bombay.

The telegram should not be despatched before Wednesday, 10th January.

If they are not received until after the 10th January, please acknowledge by letter addressed to Buckingham Palace, London.

Yours truly,

(Sd.) CHARLES CUST,

Equerry."

To

THE PRESIDENT,

U. S. I. of India.

The following telegram was accordingly despatched to Sir Charles Cust on board the *Medina* :—

"President and Council, U. S. Institution of India, gratefully acknowledge receipt of photogravures of Their Imperial Majesties and request Sir Charles Cust to express their dutiful appreciation of the honour conferred on the Institution."

The photogravures have now been framed, and placed in the Reading Room of the Institution.

## II. PRESENTATION TO THE INSTITUTION BY H. E. THE VICEROY.

His Excellency the Viceroy, Patron of the Institution, has been pleased to present one gold and one silver Durbar medal, to be placed amongst the collection of medals in the U. S. I. Reading Room.

## III. NEW MEMBERS.

The following members have joined the Institution during the months of January and February 1912:—

Lieut. W. L. Palmer.  
 Capt. B. R. Graham.  
 Major W. J. Preston.  
 Capt. E. Dickson.  
 Major E. Hingston.  
 Major M. Hancock.  
 Major M. R. Macnab.  
 Major A. Hay.  
 Lieut. G. L. Betham.  
 Lieut. H. G. Burridge.  
 Lieut. G. B. Henderson.  
 Capt. N. Neill.  
 Capt. G. O. Lewin.

Major G. Labertouche.  
 Major C. W. Robertson  
 Capt. F. Skipwith.  
 Capt. W. H. Barnett.  
 Capt. C. E. Hunt.  
 Capt. E. A. Marrow.  
 Capt. G. R. Maitland.  
 Capt. A. S. Auret.  
 Lieut. D. S. R. Macpherson.  
 Major H. T. Marshall.  
 Military District Staff, Russian Turkis-  
 tan.  
 Major L. R. Kenyon.

## IV. TACTICAL SCHEMES.

To assist officers studying tactics, tactical schemes are issued by the Council of the Institution, to members only, on the following terms:—

Rupees 5 per scheme, or Rs. 50 for a complete series of ten schemes, these charges including criticisms and solutions by a fully qualified officer selected by the Council.

Two sets of schemes (10 schemes in each series), revised to 1911, are now available, and an entirely new series (Series VI) is in process of preparation, of which six problems are ready for issue.

A number will be allotted to each member applying for papers, and solutions must be sent under these numbers to the Secretary, United Service Institution of India, Simla.

## V. MILITARY HISTORY PAPERS.

In order to assist candidates for the Staff Colleges, and other officers, in the study of military history, the Council of the Institution have decided, as a tentative measure, to issue, to members only, sets of questions on selected campaigns. The following papers are now available:—

- (a) Two sets of six questions each on Callwell's Small Wars.
- (b) Two sets of six questions each on the strategy of the Russo-Japanese War.
- (c) Three sets of six questions each on the battles of the Russo-Japanese War.
- (d) Two sets of six questions on the Afghan War, 1878—80.

The charge for these papers is Rs. 5 each, including criticism by fully qualified officers selected by the Council.

A number will be allotted to each member applying for papers, and solutions must be sent under these numbers to the Secretary, United Service Institution of India.

## **VI. CHANGES OF ADDRESS.**

Besides keeping the Secretary informed of all changes of rank and title, members are particularly requested to notify any change of address.

## **VII. LIBRARY CATALOGUE.**

The price of the new catalogue is Re. 1.

## **VIII. GOLD MEDAL ESSAY, 1911-12.**

The Council have selected the following as the subject for the Gold Medal Essay Competition for 1911-12.

"It appears to be generally recognised that the three principles of sea command, self-defence, and mutual support must be the basis of any sound system of Imperial Defence." \* (Page 33, Imperial Conference on the Naval and Military Defence of the Empire, 1909.)

Discuss the responsibility of India in regard to the use of her existing military forces in giving effect to the above principles.

**The attention of competitors is drawn to the addition made to the conditions in the slip published with the July Journal. (9) Essays must not exceed 20 pages (exclusive of tables) of the size and style of the Journal**

Further details can be obtained on application to the Secretary.

## **IX. REMITTANCES.**

In consequence of the danger of sending currency notes through the post, members are particularly requested, when making remittances to the Secretary, to make them only by money order or *crossed* cheque.

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\* Correspondence and Papers on the Naval and Military Defence of the Empire, 1909. Printed by Darling & Son, 34-40, Bacon St., London, E. Price, 6d.



There are no remarks on the papers of subject E or H (lieutenants, R.A.M.C.) or I (lieutenants, A.V.C.), but in H (lieutenants, I.M.S.) the examiner draws attention to the ignorance displayed of the present organization of Army Bearer Corps and of the duties of Hospital Store-keepers.

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"The paper set was so straightforward, that it was difficult for candidates, if they knew anything at all, to submit bad papers. The results as a whole are good. The one blot on the answers was the reply to Question 3 [which asked what was understood by the expression 'latrine management,' and what method was carried out in the candidate's own corps]. Here was a practical matter, coming within the daily cognisance of every officer, or which certainly should do. In not a single case has a candidate any real knowledge of how the latrines in his own corps are managed. It discloses a very regrettable state of affairs, and had this question been marked with any severity, at least half the candidates would have been classed as 'failed.' In future a higher standard of practical acquaintance with practical sanitary details will be expected of candidates. Too much reliance is placed on mere theoretical knowledge."

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The paper included the usual general and special ideas and candidates were asked to give (i) an appreciation, (ii) the action proposed, and (iii) orders necessary for the execution of the action proposed.

The examiner's remarks are given *in extenso*—

#### **APPRECIATION.**

"It is a principle that in the preparation of an appreciation, the writer should keep before him the fact that the object is not merely to put on paper, as requiring consideration, all the points suggested in Section 13, Training and Manœuvre Regulations, 1909, but only to include factors which may be held to influence the issue, and then to endeavour to group those factors to see what is the general drift of the conclusions to which they lead.

Nevertheless, in many of the papers, this principle was lost sight of.

A proportion of the candidates recorded a number of facts, more or less influencing the result but made no attempt to follow out an argument, so as to consider as many different views as possible of the issues open to both sides.

It is hardly necessary to say that no force can determine for itself or know beforehand absolutely what will be the field or the hour of battle. Certain appreciations, however, were thought out entirely on the lines that the enemy would assuredly take up a particular position and maintain a defensive attitude in it. By thus devising a plan of action for the enemy and laying down with certainty where and how his force must act, the main duty to be contended with

in any tactical problem was got over, in a manner no doubt pleasing to the candidate, but not to the examiner. Some candidates even went so far as to issue precise orders for the attack of the position they had decided on, which, needless to say, might or might not be held.

Instances also occurred of possibilities of action being overstrained in their consideration. To quote examples— Red cavalry and artillery certainly could not reach Sohna before, and be in a position to successfully oppose Blue. Yet this view was held by more than one candidate. There were also schemes devising the employment of village carts to carry infantry, and the use of gun limbers for the same purpose.

Now one of the dominant factors in the scheme may be said to be the uncertainty, at 8-15 A.M. on the 7th March, of the strength of the Blue column on the Bhundsi-Silani Road. It could not be safely reckoned by the Red commander that reinforcements, either by rail or road, had not reached Gurgaon after 10 P.M. the previous night. Thus, it is evident that on the morning of the 7th March, the Blue commander faced his opponent without any approach to a complete knowledge of the strength or composition of the force opposed to him. Without going into detail, it may be said at once that only a very limited number of officers took into account the need for supplementing the information already acquired; the bulk of the candidates accepted as final the strength of the enemy given in message No. 73, from the divisional headquarters.

Again, a commander who would arrive at a useful conclusion of what his opponent is likely to do, must put himself in his place, must realise the conditions under which his decisions are likely to be formed, and the courses open to him. Very few of the candidates apparently did this thoroughly, many of them seemed to shape their own conclusions without giving the Blue commander credit for any military capacity. It is satisfactory to note, however, that all the candidates, without exception, understood the value of the initiative and of a "vigorous offensive."

#### PROPOSED ACTION.

"In general terms, it may be noted that the majority of officers decided on a definite plan of action while still uncertain of their opponents' movements and strength. The vital necessity of obtaining all possible information of what the enemy was doing, before coming to a final decision, was the central fact in the problem, and this the bulk of the candidates failed to keep in view. No doubt the information furnished from divisional headquarters and by the Blue patrol threw light on the general situation, but did not suffice as the groundwork for a definite plan. It might be well supposed that by the time Silani was reached, further reports with regard to the enemy would have come in, and that it would be less difficult to realise the situation here than before starting from Jaundapur.

Comparatively few candidates, however, made their arrangements for attacking the enemy dependent on the situation as it might be disclosed to them at Silani.

Only one candidate decided to make an attempt to obtain fuller information of what was happening behind the dust on the Silam-Bhunds Road, and whether reinforcements had reached Gurgaon during the night.

A large number of candidates decided to employ a small portion of their force to delay the march of the enemy on the Silam-Bhunds Road, while they threw their main body against the Sohna column.

In this plan there was an element of danger; the strength of the Blue column it was intended to detain was unknown; in any case it was stronger than the couple of companies or  $\frac{1}{2}$  battalion of infantry with a section of artillery, the force usually selected to oppose it. Moreover, the ground near Sohna offers difficulties to the attack, the bulk of the Red force might easily find itself heavily engaged and then be "taken tactically" between the two Blue columns.

Speaking generally, it is to be noted that some of the principles contained in Chapter VI, Field Service Regulations, Part I, Operations, 1909, were not applied, and that very few officers decided to defer forming a plan of action, other than a move to Silam, until they had obtained further information from patrols or scouts.

#### ORDERS.

"In alluding to the orders issued, it may be said that the general rules regarding the form, heading, date, place, hour and mode of issue, arrangement of paragraphs, and so on, laid down in Chapter II, Field Service Regulations, Operations, 1909, were attended to.

Too frequently, however, officers apparently forgot to place themselves in the position of the recipient of their orders, had they done so, omissions would have been discovered, and in some instances details omitted, which tended to cramp the free action of subordinates.

The faults most noticeable were, not fixing a "starting point" for the columns, not mentioning the source of information usually given when describing the situation in the opening paragraph, looking too far ahead in stating intentions, making no allusions whatever to the services of maintenance.

In paragraph 4, Section 101, Chapter VII, Field Service Regulations, Part I, Operations, 1909, it is recommended that commanders of columns, when an encounter with the enemy is anticipated, should be well forward, usually with the advanced guard. Only one officer remembered this. Nor can any reason be adduced why it would be disadvantageous to put a proportion of guns with the advanced guard yet, in a very large number of the orders, the whole of the battery was kept with the main body.

There were no remarks on the papers for Messrs R.A.M.C. in technical subjects 1 and 2. In the subject 3, however, the examiner mentions that candidates showed that they had a very good general knowledge of their work, but that they were somewhat wanting in detail.

## REVIEWS.

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Lieutenant-Colonel Hehir has written an extremely comprehensive book on this subject, which is well worth adding to the library of all regiments serving in India.

He treats in great detail of all questions relating to the health of armies in peace and in war, giving statistics as to the varying losses from disease and wounds in different campaigns all over the world, and emphasising the fact that disease is infinitely more to be feared than the bullet or bayonet. He clearly demonstrates the great strides that sanitary science has taken of recent years and the paramount importance of strictly enforcing sanitary laws in order to obtain success to the field. He shows how in recent campaigns, when strict attention has been paid to sanitation, the loss to armies of huge numbers of men from disease has been avoided, and he contrasts our large losses from this cause in Tirah, etc., with the small losses of the Japanese in Manchuria, where a most elaborate system of sanitation was practised.

In this book the following subjects are very fully dealt with :— The climate of India and how its bad effect are to be combated; recruiting; marching; preparation for an expedition; water-supply; ventilation; food; barrack sanitation; sanitation of cantonments and camp; personal hygiene; clothing; infectious disease and disinfection; all the chief diseases met with in India; the sanitary service in Indian frontier warfare; and statistics of disease, wounds, etc., in Indian frontier campaigns.

It is notorious that in the past the preaching of the value of sanitation and its practice have been regarded as irksome and have been neglected by both officers and men. That sanitation should suddenly become popular and its enforcement easily accepted is not to be expected, but its tremendous importance from a purely military point of view—success in war—is acknowledged in the army of every civilised nation. The details of its application to the army in India are clearly set forth by Lieutenant-Colonel Hehir and it is only by the widespread diffusion of such knowledge that we can hope to get all officers to understand the necessity for strict observance of sanitary laws and obtain the routine and willing obedience of their men, in cantonments, and manœuvres, and on service.

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*My Experiences at Nanshan and Port Arthur with the Fifth East Siberian Rifles.* By Lieut.-General N. A. Tretyakov. Translated by Lieut. A. C. Alford, R.A., London, Hugh Rees, 1911.

General Tretyakov has given us a plain tale of duty nobly performed by a gallant regiment under adverse circumstances. Not

the least fascinating feature of the book is the almost complete absence of criticism of superiors, though the occasions for such criticisms are not wanting. The author has realised that, in publishing the experiences of his regiment, it was only necessary to take facts as they were, and not as they might have been. When we remember that those superior officers, whose conduct of operations is open to question, were subsequently tried and convicted by court-martial, we cannot but agree that General Tretyakov in refraining from criticism has been well advised. The immediate effect of the restraint in this respect is that the many gallant deeds of the Russian troops are clearly depicted, while the attention of the reader is not distracted by those personal recriminations which might so easily have marred a work of this description.

The author, as Colonel of the Fifth East Siberian Rifle, took part in the operations on the Kuantung Peninsula from the outbreak of the Russo-Japanese war to the fall of Port Arthur. He gives a graphic account of the battle of Nanshan, where his regiment had to bear the brunt of the day. We are given an insight into the circumstances which led to the comparatively easy capture of this strong position by the Japanese. The 5th E. S. R., with some detachments, was alone engaged, though three other regiments were within easy reach; artillery was inadequate; ammunition was short, and trenches were unoccupied. Further, there was indecision in the superior control. Colonel Tretyakov was in actual command on the hill and he understood that the defence was to be stubborn. It was only at 4 p.m., when the battle was almost over that he received a note from General Fock, from which it was clear that that officer's intention was *not* to hold the hill. General Tretyakov's comment — "There cannot be two commanders in one part of a field of battle, and we had three — General Fock, General Nulyein and myself," clearly indicates one of the main causes of the Japanese victory.

General Tretyakov was given command of a section of the western defences of Port Arthur, under Colonel Trunov. His section included 203 Metre Hill, Namko Yama and Akasaka Yama, and he was in personal command on 203 Metre Hill from November 28th until he was severely wounded on the eve of its capture by the Japanese.

While the account of the author's experiences throws many interesting sidelights on the history of the siege of Port Arthur, its chief value lies in the lesson to be learnt of the powers and limitations of brave men under the strain of severe and almost continuous fighting. To those who are apt to study strategy and tactics as if they were exact sciences, and who forget that the bed-rock on which they both rest is the *moral* and power of endurance of the men, General Tretyakov's work is a useful corrective. It is alive with human interest, and we are given a picture of war as seen by the man in the ranks.

Useful lessons are also to be learnt from the author's comments on such matters as the importance of organisation, of unity of com-

mand and of co-operation between arms. His remarks on the value of brave and highly trained officers deserve to be widely read:—"A good officer stands for much in battle, just as a bad one may cause irreparable harm." Then, after giving his views on the training of officers, he concludes:—"A really talented officer is priceless, but such a man is a hundred times more rare than a talented painter, professor, or other civilian"—(p. 263). Of special interest are the opinions given of the fighting value of the Japanese:—"It is absurd to credit them with exceptional knowledge and skill in military science. Neither do I acknowledge that they are exceptionally brave, in which opinion my riflemen agree with me. The Japanese are very cautious, and they have no reason to boast of their daring. True, they attack without flinching, for this there are many reasons: first of all their initial success; secondly, the numerical inferiority of our garrison, and, thirdly, the fact that they may be peppered with shrapnel if they do not advance"—(p. 264). We cannot agree with this opinion. The gallantry displayed by the Japanese on many occasions was beyond praise, and that this gallantry so often spent itself in vain against the Russian defences reflects the greater honour on the soldiers of the Czar. The question of the valour of both armies is aptly summarised in our official history of the war—"The countries which produce the heroes of Port Arthur may well be proud of their sons."

Officers will find in General Tretyakov's book much that will give them food for thought and much that will be of value to them in training their men for war.

In future editions of the work it would be advantageous to make some slight alterations in the maps, *e.g.*, in map 4, the names might well have been printed on the map in English and not only in the margin.



# UNITED SERVICE INSTITUTION OF INDIA

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APRIL, 1912.

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## SECRETARY'S NOTES.

### I. PRESENTATION TO THE INSTITUTION BY THEIR IMPERIAL MAJESTIES.

Before leaving India, Their Imperial Majesties graciously presented signed photogravures of themselves to the Institution.

The following letter announcing the gift was received from Commander Sir Charles Cust, K.C.V.O. :—

KING EMPEROR'S CAMP.

INDIA :

6th January 1912.

"DEAR SIR,

I am commanded by the King-Emperor and the Queen-Empress to send you, for the United Service Institution, Simla, a pair of photogravures.

It is Their Imperial Majesties' desire that they should be hung in a conspicuous position, which no doubt your Committee will be able to select.

If they arrive on or before Wednesday, 10th January, I shall be obliged if you will acknowledge their receipt by telegram addressed to Sir Charles Cust, H.M.S. *Medina*, Bombay.

The telegram should not be despatched before Wednesday, 10th January.

If they are not received until after the 10th January, please acknowledge by letter addressed to Buckingham Palace, London.

Yours truly,  
(Sd.) CHARLES CUST,  
Equerry."

To  
THE PRESIDENT,  
U. S. I. of India.

The following telegram was accordingly despatched to Sir Charles Cust on board the *Medina* :—

"President and Council, U. S. Institution of India, gratefully acknowledge receipt of photogravures of Their Imperial Majesties and request Sir Charles Cust to express their dutiful appreciation of the honour conferred on the Institution."

The photogravures have now been framed, and placed in the Reading Room of the Institution.



## II. PRESENTATION TO THE INSTITUTION BY H. B. THE VICEROY.

His Excellency the Viceroy, Patron of the Institution, has been pleased to present one gold and one silver Durbar medal, to be placed amongst the collection of medals in the U. S. I. Reading Room.

## III. NEW MEMBERS.

The following members have joined the Institution during the months of January and February 1912:—

Lieut. W. L. Palmer.

Capt. B. R. Graham.

Major W. J. Preston.

Capt. E. Dickson.

Major E. Hingston.

Major M. Hancock.

Major M. R. Macnab.

Major A. Hay.

Lieut. G. L. Betham.

Lieut. H. G. Burridge.

Lieut. G. B. Henderson.

Capt. N. Neill.

Capt. G. O. Lewin.

Major G. Labertouche.

Major C. W. Robertson.

Capt. F. Skipwith.

Capt. W. H. Barnett.

Capt. C. E. Hunt.

Capt. E. A. Marrow.

Capt. G. R. Matfield.

Capt. A. B. Auret.

Lieut. D. S. R. Macpherson.

Major H. T. Marshall.

Military District Staff, Russian Turkestan.

Major L. R. Kenyon.

## IV. TACTICAL SCHEMES.

To assist officers studying tactics, tactical schemes are issued by the Council of the Institution, to members only, on the following terms:—

Rupess 5 per scheme, or Rs. 50 for a complete series of ten schemes, these charges including criticisms and solutions by a fully qualified officer selected by the Council.

Two sets of schemes (10 schemes in each series), revised to 1911, are now available and an entirely new series (Series VI) is in process of preparation, of which six problems are ready for issue.

A number will be allotted to each member applying for papers, and solutions must be sent under these numbers to the Secretary, United Service Institution of India, Simla.

## V. MILITARY HISTORY PAPERS.

In order to assist candidates for the Staff College, and other officers, in the study of military history, the Council of the Institution have decided, as a tentative measure, to issue, to members only sets of questions on selected campaigns. The following papers are now available:—

(1) Two sets of six questions each on the Crimean Small Wars.

(2) Two sets of six questions each on the strategy of the Russo-Japanese War.

(3) Three sets of six questions each on the tactics of the Russo-Japanese War.

(4) Two sets of six questions on the Afghan War, 1879-80.

The charge for these papers is Rs. 5 each, including criticism by fully qualified officers selected by the Council.

A number will be allotted to each member applying for papers, and solutions must be sent under these numbers to the Secretary, United Service Institution of India.

## **VI. CHANGES OF ADDRESS.**

Besides keeping the Secretary informed of all changes of rank and title, members are particularly requested to notify any change of address.

## **VII. LIBRARY CATALOGUE.**

The price of the new catalogue is Rs. 1.

## **VIII. GOLD MEDAL ESSAY, 1911-12.**

The Council have selected the following as the subject for the Gold Medal Essay Competition for 1911-12.

"It appears to be generally recognised that the three principles of sea command, self-defence, and mutual support must be the basis of any sound system of Imperial Defence." \* (Page 33, Imperial Conference on the Naval and Military Defence of the Empire, 1909.)

Discuss the responsibility of India in regard to the use of her existing military forces in giving effect to the above principles.

The attention of competitors is drawn to the addition made to the conditions in the slip published with the July Journal. (9) Essays must not exceed 20 pages (exclusive of tables) of the size and style of the Journal

Further details can be obtained on application to the Secretary.

## **IX. REMITTANCES.**

In consequence of the danger of sending currency notes through the post, members are particularly requested, when making remittances to the Secretary, to make them only by money order or *crossed* cheque.

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\* Correspondence and Papers on the Naval and Military Defence of the Empire, 1909. Printed by Darling & Son, 34-40, Bacon St., London, E. Price, 6d.





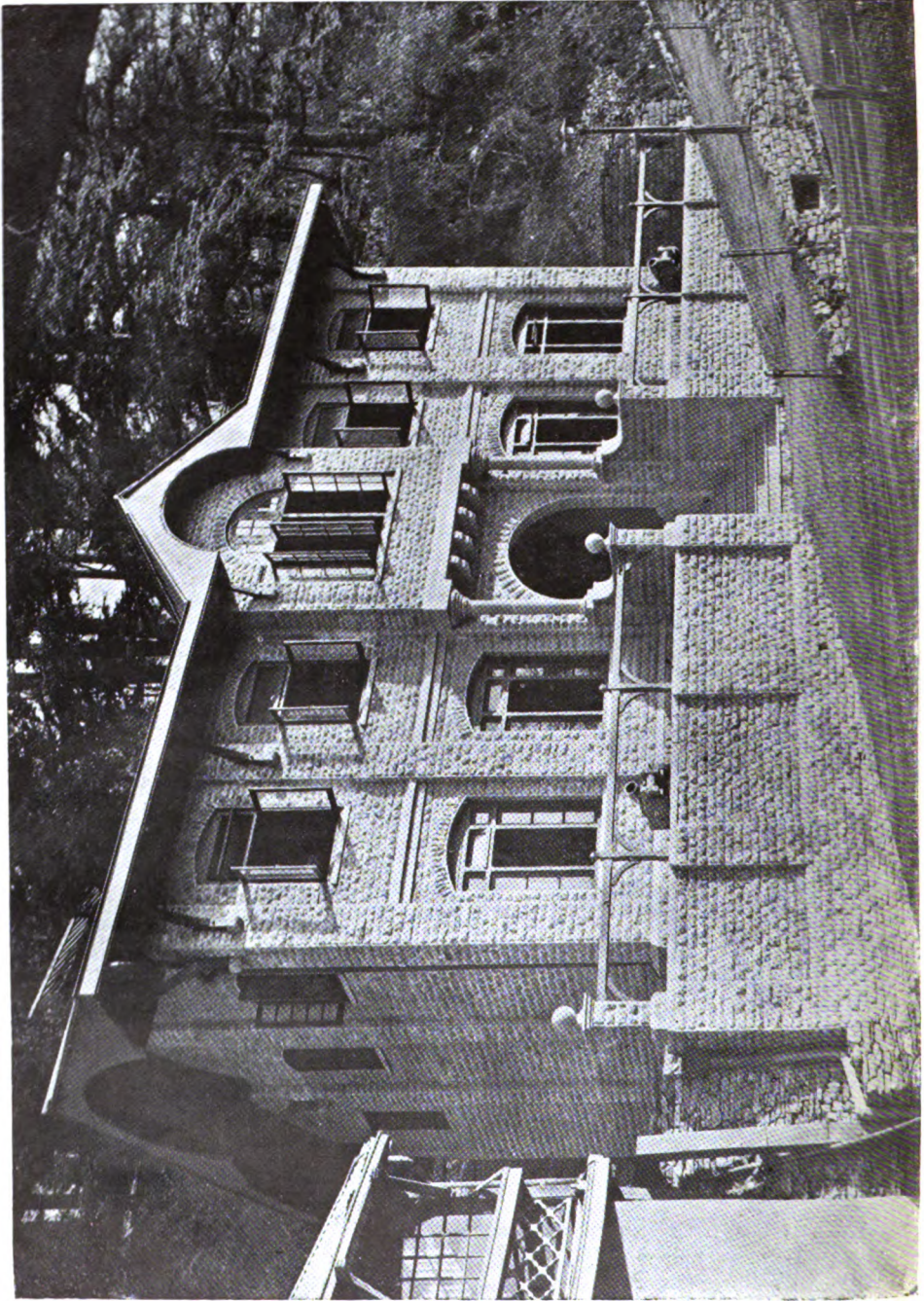












L. S. H. King

THE NEW BUILDING OF THE UNITED SERVICE INSTITUTION OF INDIA, SIMLA.

Photo. by

# THE JOURNAL

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## United Service Institution of India.

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### THE ASSAYE CAMPAIGN.

BY BREVET LIEUT.-COL. W. D. BIRD, D.S.O.

However reasonable may be the claim of the British that the stability of their Indian Empire now rests upon the justice of their rule, it is certain that the foundations of this, as of every other dominion that the world has seen, were laid in conquest and hard blows.

Of the many fierce struggles which comprise the history of the rise of British power in India none was more important than the second Mahratta war of 1803.

Sooner or later all large empires feel the action of those centrifugal forces which cause men to believe that local interests are of greater import than the welfare of the State, and this is especially true of those in which slowness of intercommunication between the parts tends to development of local rather than imperial sentiment.

The Mahratta empire, carved in the 17th century by the genius of Sivaji from the decadent Mogul empire, had therefore quickly degenerated into a loose confederation bound together only by the sentiment of common race, and by the stronger tie of community of interest in resisting foreign aggression.

At the commencement of the 19th century the Confederation comprised five States (map 1):—

Poona, ruled by the Peishwa, and embracing the western coast-line of the Indian Peninsula from Baroda to Mysore, and the Ghauts.

Gwalior, ruled by Scindia.

Indore, under Holkar.

Baroda and Guzerat, of which the Gaikwar was sovereign.

Berar, Nagpur, and part of Orissa, governed by the Bhonsla Raja.

The Confederation under nominal presidency of the Peishwa, who owed his position to the fact that he occupied in the Mahratta

religion a position analogous to that held by the Sultan of Turkey in Islam, was governed by a code of laws, which, whilst leaving each prince independent as regards his own territory and its internal affairs, forbade engagements affecting the Mahratta nation as a whole, without the sanction of the remainder. In other words the foreign policy of the Confederation, and therefore the military establishments required for its support, was nominally directed by a Confederate Council.

The States were theoretically equal as regards influence and voting power. In practice, as must always happen in such circumstances, one usually aspired to dominate the Council, pretensions which were as a matter of course resisted by the remainder.

The never ending friction and the frequent internecine wars which resulted were therefore such as to render the fabric of the Confederation the reverse of stable. Worse still the members, losing sight of common interest in the heat of party conflict, did not disdain ruinous appeals to foreign intervention, the cost of which is too often the eventual servitude of the suppliant.

In 1802 the most powerful of the Mahratta States were Gwalior and Indore, whose princes, bitter rivals, maintained large and relatively well armed and efficient forces, organized and to a certain extent trained under the guidance of ex-officers from the French and other European armies.

The British by their occupation of Bombay and other places on the western coast-line of the Peninsula had at once come into contact with the members of the Confederacy, who proved themselves uneasy neighbours, for though too much distracted by mutual rivalry to make common cause against the invaders, they were equally incapable of negotiating, as a Confederacy, foreign treaties and compositions.

About the year 1800 the Marquis Wellesley, when appointed Governor-General of the territories of the East India Company, decided to abandon attempts to negotiate with the Confederacy as a whole, and at once proceeded to approach the various States separately, playing on their mutual fears and jealousies.

The Gaikwar and the Peishwa were the rulers with whom negotiations were first opened, with the result that in 1802 the Company succeeded in concluding an offensive and defensive alliance with the Gaikwar.

Meanwhile the other members of the Confederation had been engaged amongst themselves in active warfare, and in 1802 Holkar was decisively defeated by Scindia in a battle which took place near Indore.

Scindia however made the too common mistake of resting on his laurels, and as he neglected to follow up and profit by his victory, Holkar was able to rally, and finally to turn the tables on Scindia and the Peishwa in a battle fought in the neighbourhood of Poona.

The defeated Peishwa thereupon fled for asylum into British territory, and found a place of refuge at Bassein, a few miles north

of Bombay. As a result he too concluded an offensive and defensive alliance with the Company under which it was agreed that a British garrison should be maintained in Poona for the protection of the Peishwa and at his expense—a cheap and effective expedient for increasing the armed forces of the Company.

Poona was still however held by the troops of Holkar, and it therefore became necessary to evict them.

Immediately after the battle of Poona Lord Wellesley, fearing aggression on the part of Holkar, had ordered the forces in the Madras Presidency to be assembled under General Stuart on the northern frontier of Mysore. At the same time to safeguard Hyderabad, which was under the protection of the Company, a force under Colonel Stevenson consisting of the Hyderabad Contingent between 8,000—9,000 strong, together with some of the native troops belonging to the Nizam, was moved to the northern frontier of that State.

On the signature of the treaty with the Peishwa, Arthur Wellesley who was serving in the Madras Presidency, and had recently been promoted major-general at the age of 33, was placed by General Stuart in command of a detachment of 8,000 infantry and 1,700 cavalry with orders to co-operate with Stevenson in reinstating the Peishwa in his capital.

The two joined hands at Akloos (Map 2) on 15th April 1803, but Wellesley, hearing that Holkar had retired to his own territory leaving only 1,500 men in Poona, and also because the country was not sufficiently fertile for the maintenance of a force of nearly 20,000 men advancing by one road, again detached Stevenson to secure the northern frontier of Hyderabad against incursions on the part of Holkar.

Having received news that the officer left by Holkar in command of the garrison at Poona contemplated the burning and evacuation of the city, Wellesley hurried forward with his cavalry to avert the disaster.

Marching not by the direct road, which was reported to be occupied by the enemy, but by the Bore Ghaut, the pass now followed by the Southern Mahratta Railway, he reached Poona on 20th, in time to save the place from destruction, for the Mahrattas who were completely surprised retired hurriedly on the approach of the British.

On 13th May the Peishwa was reinstated in Poona with due ceremony.

Scindia now entered the lists against the British, and alarmed by their occupation of Poona patched up his quarrel with Holkar, urging him, as well as Bhonsla, to join in driving the British into the sea.

Holkar however hesitated. Making an error not uncommon in statesmanship, his attitude is said to have been due to the belief that if he stood aside or remained neutral, he would be able to intervene with advantage to himself when the belligerents were exhausted. He did not apparently consider and discount the possibility that easy victory by one side or the other would result in

such accession of strength and confidence as would render his own conquest a matter of course should it be undertaken.

At this juncture General Wellesley was appointed commander-in-chief of the forces in Mahratta territory, including, besides his own troops and those of Stevenson, considerable detachments operating in Guzerat and in Baroda. He was at the same time invested with political powers, which throughout the campaign involved him in continual and lengthy correspondence on all manner of non-military subjects.

News having come to the ears of the Governor-General of the machinations of Scindia, he was called on for an explanation of his policy. Scindia replied in a spirited manner by moving an army to the frontier of the Nizam's territory, the Bhonsla Raja following suit. General Wellesley at once adopted vigorous counter-measures, Stevenson being directed to cross the Godavery. At the same time he himself marched north-east and reached, on 14th June, Walki, a village a few miles south of the fortified town of Ahmednagar, which though situated in the territory of the Peishwa, was held by a strong garrison of Scindia's troops.

Negotiations were now commenced between Wellesley and Scindia which dragged on for some weeks, and were finally brought to a close by a proposal by the British that, as a token of good faith, both sides should withdraw all troops to their respective territories.

This Scindia refused to do whereupon Wellesley declared war on 7th August on Scindia and Bhonsla, his action being confirmed by the Governor-General.

The topography of the Deccan, where the campaign was in the main fought out, resembles that of the Orange River Colony, consisting of a series of slightly undulating plains broken here and there by groups or larger ranges of hills. Of the latter the most considerable extend from the Thal Ghaut eastwards past Manmad, and are practicable for wheeled traffic only in comparatively few places.

The Deccan is fairly well watered and fertile, and whilst all but the larger rivers sink into a series of pools during the dry season, in the monsoon the rivers swell at times to formidable size and there is no lack of water. During the monsoon the climate is also cooler than at almost any other time of the year.

The towns, with but few exceptions, consisted of a pettah or fortified suburb clustering round a walled citadel, the pettah itself being enclosed by a considerable wall of sun-dried bricks and mud. The villages were of similar design. All boasted of high walls of mud and many had in addition a mud-walled citadel.

The armed forces of Scindia and Bhonsla were numerically formidable, being estimated at about 100,000 fighting men, of whom perhaps half were mounted. Of the remainder 30,000 were infantry and artillery, trained, and officered in the higher ranks, by Europeans, the rest being irregulars.

The armies were distributed in two groups, the northern portion of the territory of the allies being guarded by some 35,000—40,000

men, while for operations in the Deccan and Guzerat there were available about 30,000 horse, 12,000 trained infantry, besides artillery and irregulars.

The British forces available for operations against the Mahrattas comprised about 36,000 men in the Deccan and Guzerat, and about 20,000 in Bengal.

Neither side possessed any marked advantage in the matter of armament, but the Mahratta artillery was the more numerous and was well manned. The guns fired round shot and grape, and artillery fire began to produce serious losses at ranges of between 700—800 yards. The weapon of the infantry was the musket, with which effect began to be produced at about 200 yards range.

The advantage of mobility lay with the Mahrattas, for the operations of the British were encumbered by tents and an army of followers which were considered necessary accessories of campaigning in India.

The British plan of campaign was comprehensive in character and contemplated not only a simultaneous and converging advance into the dominions of the allies, but operations from Baroda.

Early in August General Lake was to move from Cawnpore against Bundelkhand with 8,000 men, whilst a column of 3,000 men from Allahabad advanced in the same direction. A third column was simultaneously to invade the Cuttack--(Map 1).

In the south 3,500 men were detailed to guard Hyderabad and Poona, 8,000 under General Stuart were to act as a kind of central reserve in the area between the Kistna and Tangbadra rivers (map 2), 7,000 were to operate in the Guzerat, about 8,000 under Stevenson were to guard the northern portion of the territory of the Nizam co-operating with Wellesley, who with 9,600 was to advance in a north-easterly direction from Ahmednagar.

It is a maxim of war that concentration of effort can alone lead to success. The dissemination of the forces of the British therefore requires explanation.

The reasons were probably two-fold. In the first place the troops were already scattered and to concentrate them would, if possible at all, have occupied time which was not available. In the second it is more than likely that difficulties of supply would have precluded operations along a single line with a large force. Again concentric operations however dangerous against highly organized armies under educated commanders, owing to the risk that is run of defeat in detail, are less objectionable in warfare against the forces of semi-civilised communities. In these forces leaders rarely possess the instinct which should prompt them to concentrate effort against one of the separated portions of the enemy's army, and more usually divide their armies with the object of safeguarding territory, and therefore play into his hands.

Concentric movements are also of advantage in bringing the enemy to battle, since action with one of the converging forces can hardly be avoided. Moreover, the whole hostile territory is overrun



and the burden of war is felt by the whole of the inhabitants, and at the same time one's own territory is to a great extent secured against raids.

Active operations in the southern theatre of war began during what should have been the height of the monsoon. The rainfall of 1803 proving however to be below the normal quantity, the rivers of the Deccan were flooded only for brief periods and consequently did not offer an effective obstacle to military operations, nor was the state of the roads, except for short periods, such as seriously to impede marching. On the other hand the grass and other crops were in quality and quantity much below the average, and as in addition the area in which Wellesley and Stevenson operated had for some time been subject to the ravages of the Mahratta horsemen, it became necessary to import supplies from great distances.

In these circumstances recourse to the system of maintaining a continuous flow of supplies along the stages of a carefully guarded line of communication would obviously have resulted in absorbing the whole of Wellesley's and Stevenson's small forces in its defence. Resort was therefore had to a plan of through convoys, large convoys being from time to time despatched by Stuart from the Kistna, with sufficient escort, and marching right through to Wellesley. The arrangement was however not without certain disadvantages, for Wellesley's freedom of action was considerably reduced by the necessity of waiting on the movements of his convoys, and at the same time their liability to interception rendered the maintenance of the force somewhat precarious.

On the 8th August, taking advantage of a break in the monsoon, Wellesley commenced operations by marching against Ahmednagar with 1,700 cavalry, and 7,000 infantry, besides 5,000 irregular horse drawn from Mysore, Hyderabad, and other places.

The pettah, though enclosed by a formidable wall of mud and garrisoned by a regular battalion, some horse, and a body of Arab mercenaries, was stormed on the same day, an achievement which produced a considerable effect on the *moral* of the two armies, for the Mahrattas and Arabs had boasted of their ability to hold it against all comers.

On 9th Wellesley reconnoitred the fort, considered to be one of the strongest places in India; on the next day a battery was opened and on the 11th the garrison, doubtless still under the influence of the easy capture of the pettah, surrendered, thus proving that real strength of fortifications lies not in the height of the parapets and depth of the ditches but in the stoutness of the hearts of those who defend them. Wellesley now learnt from Stevenson that though Aurangabad, Daulatabad, and other towns were held by the enemy, the main body of the Mahrattas was still lying north of the range of Ghauts, which runs eastward past Manmad and constitutes the northern boundary of the dominions of the Nizam. He at once determined to press forward with the object of carrying the war into the enemy's country, and on 14th August despatched the cavalry to

a village on the Godavery called Toka, with orders to take measures to secure the passage of the river, and to collect or cause to be built sufficient boats of wicker and daub, covered with skins, to enable the army to cross the stream should it prove to be in flood.

The infantry followed four days later, and after crossing the Nimdarah Ghaut and traversing an area which had been devastated by the Mahrattas, reached Toka on 22nd, where the river was found to be nearly 200 yards wide and 10—12 feet deep, whilst the boats available were not sufficient to accommodate the force.

All hands were immediately turned to boat building, with the result that sufficient craft for the passage of the army were soon constructed and the troops safely ferried across on the 24th.

Meanwhile Wellesley was without information as to the movements of the enemy and possessed but imperfect means of obtaining it. As he wrote in a memorandum on this subject—"the information which we obtain regarding the position of the enemy whom we intend to attack is in general very imperfect. We cannot send out the trained scouts in the Company's service because, being inhabitants of the Carnatic or Mysore, they are as easily distinguished in this part of the country as if Europeans; and we cannot view their positions ourselves till we bring up the main body of our armies because the enemy is always surrounded by large bodies of horse. The consequence is that we are obliged to employ natives of the country and to trust to their reports."

Whilst Wellesley had been engaged in arrangements for the passage of the Godavery the Mahrattas had not been idle, for leaving their irregular infantry near the Adjunta to contain Stevenson, Scindia and Bhonsla had moved with their cavalry into the territory of the Nizam, and had advanced towards Jalna with the double object of raiding and of harassing the communications between Wellesley and Stuart.

Their plan of campaign, adopted at the instance of Bhonsla, was apparently to follow the troublesome precedent set by Tippoo in the wars between the Madras Government and Mysore, and to carry out an extensive series of raids into the territory of the Nizam. Battle was to be avoided until the British had exhausted themselves in the vain attempt to follow the movements of the Mahrattas, or until their depredations had in self-defence forced the Nizam to join their cause.

Such projects though doubtless plausible and attractive to those who aim at obtaining great advances with but little risk are inherently unsound. For a time the enemy may be placed in difficulties, but the fact of avoiding a decision when it should be sought must react unfavourably on the *moral* of an army, which if accustomed to shun battle will not, when the moment arrives, remain steadfast in the crisis of an action.

So many days had now elapsed since the receipt of the news that the Mahrattas were north of the Ghauts that after crossing the Godavery the British General was in some doubt how to proceed.



In circumstances of this nature the best plan usually is to move on some locality which the enemy is likely for his own security to defend, or if he fails to do so will suffer serious injury from its abandonment. In the first case he will be forced to conform to our movements, abandoning his own plans, in the second he will equally be at a disadvantage.

Such a locality was to be found in the Adjunta Pass, which was the most practicable of the passes leading from the territory of Scindia towards Aurangabad and Daulatabad.

Whether Wellesley intended to adopt some such project is not known, but on 28th August he advanced to Jalgaon, and the next day reached Aurangabad, which had been evacuated by the enemy, though a garrison had been thrown into the fort at Jalna.

Leaving a small detachment in Aurangabad the British marched on 30th in the direction of Jalna, halting at Bulgaon, and on 31st the force moved to Baumungun.

Here news was received that the Mahratta army was at Kalgaon to the south of Jalna, and that rumours were current that it was the intention of Scindia either to advance on Hyderabad or to interrupt the communications between Wellesley and Stuart.

Wellesley was now confronted with one of those dilemmas which make war so difficult an art to practise with success. Should he follow the enemy and in doing so perhaps act as the enemy desired; should he remain passive and allow the Mahrattas to ravage at will the territory of the Nizam and alienate that monarch from the British; or should he make a counter-attack into Mahratta territory in the hope that this would draw the Mahrattas after him?

Each course possessed serious drawbacks, and in such circumstances it is best to select the plan which promises the greatest advantages to oneself and will be most disadvantageous to the enemy. These conditions were apparently fulfilled by the last of the three, but Wellesley chose a middle course, probably with the object of retaining the power directly to protect his convoys in case of need. He therefore contemplated moving to a locality where he could interpose between the Mahratta cavalry and the infantry which was still near the Ghauts, in the hope of drawing the former northwards again.

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In spite of this success and of another fortunate night attack on a detachment of Mahrattas on 9th, the enemy still continued to harass Stevenson, probably with the object of covering the march of their infantry.

On 11th, therefore, on receiving news that the main body of the Mahratta cavalry had moved towards Budnapur, Wellesley marched to Hudgaon in order to be in position to assist Stevenson in case of need.

The British commander does not appear to have desired to precipitate a crisis, his aim being to encourage the enemy by a show of inactivity and at the same time to secure the safe arrival of his convoy. His anxiety, he wrote, was not that the enemy would attack Stevenson but that, as heretofore, the Mahrattas would avoid action, and especially battle with his own force of which they seemed to be afraid.

No important developments having occurred in the meanwhile, Wellesley marched on 15th to Govandy to meet his long expected convoy which came safely into camp on the following day.

On 17th he returned to Hudgaon, and on discovering that the Mahrattas were still in force in the area south of the Adjunta, decided on a bold plan of action calculated to bring about a decisive battle. Stevenson was accordingly notified that on 19th Wellesley would march on Gola and Pangri. On 21st Stevenson, from Budnapur, was to push the enemy towards the Adjunta Pass, whilst Wellesley, moving *via* Jaffeirabad, was to cross the Ghauts by the Dewal Pass and take the enemy in rear.

The project was undoubtedly hazardous, for separation of the two British forces by a rugged range of mountains was contemplated. In war, however, decisive success is not gained without some risk of failure, and the extent of the danger which is incurred is measured not by the actual form of the operation but by the character and fighting value of the enemy. No just appreciation of the merits of a plan can therefore be made apart from the circumstances in which it was conceived and executed. In any case the object of a commander should be so to plan his operations that if successful the greatest advantage will be gained irrespective of the consequences of possible failure. Each blow should therefore be so aimed and delivered that the enemy will be forced to parry it and to conform to

the movements of the attacker, abandoning his own plans. This will be the case when the security of the enemy's line of communication is in question.

Wellesley's plan then was in the circumstances perfectly sound so far as it was calculated to bring the enemy to action in conditions which promised that success, if gained by the British, would be decisive. On the other hand the project, based as it was on apparently not very trustworthy information, must be condemned, nor was it sound to rely for success on the exact timing of a series of operations, which were to extend over several days, when some unforeseen movement by the enemy might produce a radical change in the whole situation.

Wellesley appears however to have changed his mind, for on 21st he marched northwards to Sailgaon, only a short distance from the camp of Stevenson, and here the two leaders met and concerted a new plan.

The physical characteristics of the area in which the British were now concentrated were as follows :—

Some three to five miles north of Jalna and Budnapur stretches an almost continuous line of low hills extending for many miles both to the east and west. Flat topped and with steep sides, the hills are covered with loose stones and rocks, and in many places are also overgrown with scrub jungle. In the few localities, where the water in draining away has worn a passage through them, are found shallow valleys from two to three miles wide, and on the banks of the little streams stand here and there fortified villages, each with a massive keep of sun-dried mud in its centre. Connecting these hamlets were rugged paths or tracks, the best if not the only means of crossing the hills, which though quite practicable when dry became almost impassable in wet weather by troops. North of Jalna the hill belt is narrowest, being not more than five miles in depth, but at Budnapur it extends for quite twice that distance.

Beyond the hills lies a great rolling plain with long undulations which run from three to four miles apart and generally speaking in a north-easterly and south-westerly direction, and here the higher ground is covered with grass of poor quality growing amidst a scanty crop of low bushes. Apart from its undulations the plain is featureless even to monotony, except where here and there a great tree rears itself above the surrounding scrub, or a little knoll crowns the summit of a rise. Between the undulations flow small streams, and on their banks stood a number of villages in the midst of half cultivated fields, sheltering within their walls such cattle as had escaped the marauders.

The plan now agreed to by Wellesley and Stevenson was in character not dissimilar to that which has been described, involving first separation, then simultaneous advance along two lines across the hills, thus closing the routes by which the enemy might again attempt to break southwards, and finally convergent advance against the Marhatta army, the main body of which was believed to be at Bokerdun.

religion a position analogous to that held by the Sultan of Turkey in Islam, was governed by a code of laws, which, whilst leaving each prince independent as regards his own territory and its internal affairs, forbade engagements affecting the Mahratta nation as a whole, without the sanction of the remainder. In other words the foreign policy of the Confederation, and therefore the military establishments required for its support, was nominally directed by a Confederate Council.

The States were theoretically equal as regards influence and voting power. In practice, as must always happen in such circumstances, one usually aspired to dominate the Council, pretensions which were as a matter of course resisted by the remainder.

The never ending friction and the frequent internecine wars which resulted were therefore such as to render the fabric of the Confederation the reverse of stable. Worse still the members, losing sight of common interest in the heat of party conflict, did not disdain ruinous appeals to foreign intervention, the cost of which is too often the eventual servitude of the suppliant.

In 1802 the most powerful of the Mahratta States were Gwalior and Indore, whose princes, bitter rivals, maintained large and relatively well armed and efficient forces, organized and to a certain extent trained under the guidance of ex-officers from the French and other European armies.

The British by their occupation of Bombay and other places on the western coast-line of the Peninsula had at once come into contact with the members of the Confederacy, who proved themselves uneasy neighbours, for though too much distracted by mutual rivalry to make common cause against the invaders, they were equally incapable of negotiating, as a Confederacy, foreign treaties and compositions.

About the year 1800 the Marquis Wellesley, when appointed Governor-General of the territories of the East India Company, decided to abandon attempts to negotiate with the Confederacy as a whole, and at once proceeded to approach the various States separately, playing on their mutual fears and jealousies.

The Gaikwar and the Peishwa were the rulers with whom negotiations were first opened, with the result that in 1802 the Company succeeded in concluding an offensive and defensive alliance with the Gaikwar.

Meanwhile the other members of the Confederation had been engaged amongst themselves in active warfare, and in 1802 Holkar was decisively defeated by Scindia in a battle which took place near Indore.

Scindia however made the too common mistake of resting on his laurels, and as he neglected to follow up and profit by his victory, Holkar was able to rally, and finally to turn the tables on Scindia and the Peishwa in a battle fought in the neighbourhood of Poona.

The defeated Peishwa thereupon fled for asylum into British territory, and found a place of refuge at Bassein, a few miles north

of Bombay. As a result he too concluded an offensive and defensive alliance with the Company under which it was agreed that a British garrison should be maintained in Poona for the protection of the Peishwa and at his expense—a cheap and effective expedient for increasing the armed forces of the Company.

Poona was still however held by the troops of Holkar, and it therefore became necessary to evict them.

Immediately after the battle of Poona Lord Wellesley, fearing aggression on the part of Holkar, had ordered the forces in the Madras Presidency to be assembled under General Stuart on the northern frontier of Mysore. At the same time to safeguard Hyderabad, which was under the protection of the Company, a force under Colonel Stevenson consisting of the Hyderabad Contingent between 8,000—9,000 strong, together with some of the native troops belonging to the Nizam, was moved to the northern frontier of that State.

On the signature of the treaty with the Peishwa, Arthur Wellesley who was serving in the Madras Presidency, and had recently been promoted major-general at the age of 33, was placed by General Stuart in command of a detachment of 8,000 infantry and 1,700 cavalry with orders to co-operate with Stevenson in reinstating the Peishwa in his capital.

The two joined hands at Akloos (Map 2) on 15th April 1803, but Wellesley, hearing that Holkar had retired to his own territory leaving only 1,500 men in Poona, and also because the country was not sufficiently fertile for the maintenance of a force of nearly 20,000 men advancing by one road, again detached Stevenson to secure the northern frontier of Hyderabad against incursions on the part of Holkar.

Having received news that the officer left by Holkar in command of the garrison at Poona contemplated the burning and evacuation of the city, Wellesley hurried forward with his cavalry to avert the disaster.

Marching not by the direct road, which was reported to be occupied by the enemy, but by the Bore Ghaut, the pass now followed by the Southern Mahratta Railway, he reached Poona on 20th, in time to save the place from destruction, for the Mahrattas who were completely surprised retired hurriedly on the approach of the British.

On 13th May the Peishwa was reinstated in Poona with due ceremony.

Scindia now entered the lists against the British, and alarmed by their occupation of Poona patched up his quarrel with Holkar, urging him, as well as Bhonsla, to join in driving the British into the sea.

Holkar however hesitated. Making an error not uncommon in statesmanship, his attitude is said to have been due to the belief that if he stood aside or remained neutral, he would be able to intervene with advantage to himself when the belligerents were exhausted. He did not apparently consider and discount the possibility that easy victory by one side or the other would result in

such accession of strength and confidence as would render his own conquest a matter of course should it be undertaken.

At this juncture General Wellesley was appointed commander-in-chief of the forces in Mahratta territory, including, besides his own troops and those of Stevenson, considerable detachments operating in Guzerat and in Baroda. He was at the same time invested with political powers, which throughout the campaign involved him in continual and lengthy correspondence on all manner of non-military subjects.

News having come to the ears of the Governor-General of the machinations of Scindia, he was called on for an explanation of his policy. Scindia replied in a spirited manner by moving an army to the frontier of the Nizam's territory, the Bhonsla Raja following suit. General Wellesley at once adopted vigorous counter-measures, Stevenson being directed to cross the Godavery. At the same time he himself marched north-east and reached, on 14th June, Walki, a village a few miles south of the fortified town of Ahmednagar, which though situated in the territory of the Peishwa, was held by a strong garrison of Scindia's troops.

Negotiations were now commenced between Wellesley and Scindia which dragged on for some weeks, and were finally brought to a close by a proposal by the British that, as a token of good faith, both sides should withdraw all troops to their respective territories.

This Scindia refused to do whereupon Wellesley declared war on 7th August on Scindia and Bhonsla, his action being confirmed by the Governor-General.

The topography of the Deccan, where the campaign was in the main fought out, resembles that of the Orange River Colony, consisting of a series of slightly undulating plains broken here and there by groups or larger ranges of hills. Of the latter the most considerable extend from the Thal Ghaut eastwards past Manmad, and are practicable for wheeled traffic only in comparatively few places.

The Deccan is fairly well watered and fertile, and whilst all but the larger rivers sink into a series of pools during the dry season, in the monsoon the rivers swell at times to formidable size and there is no lack of water. During the monsoon the climate is also cooler than at almost any other time of the year.

The towns, with but few exceptions, consisted of a pettah or fortified suburb clustering round a walled citadel, the pettah itself being enclosed by a considerable wall of sun-dried bricks and mud. The villages were of similar design. All boasted of high walls of mud and many had in addition a mud-walled citadel.

The armed forces of Scindia and Bhonsla were numerically formidable, being estimated at about 100,000 fighting men, of whom perhaps half were mounted. Of the remainder 30,000 were infantry and artillery, trained, and officered in the higher ranks, by Europeans, the rest being irregulars.

The armies were distributed in two groups, the northern portion of the territory of the allies being guarded by some 35,000—40,000

men, while for operations in the Deccan and Guzerat there were available about 30,000 horse, 12,000 trained infantry, besides artillery and irregulars.

The British forces available for operations against the Mahrattas comprised about 36,000 men in the Deccan and Guzerat, and about 20,000 in Bengal.

Neither side possessed any marked advantage in the matter of armament, but the Mahratta artillery was the more numerous and was well manned. The guns fired round shot and grape, and artillery fire began to produce serious losses at ranges of between 700—800 yards. The weapon of the infantry was the musket, with which effect began to be produced at about 200 yards range.

The advantage of mobility lay with the Mahrattas, for the operations of the British were encumbered by tents and an army of followers which were considered necessary accessories of campaigning in India.

The British plan of campaign was comprehensive in character and contemplated not only a simultaneous and converging advance into the dominions of the allies, but operations from Baroda.

Early in August General Lake was to move from Cawnpore against Bundelkhand with 8,000 men, whilst a column of 3,000 men from Allahabad advanced in the same direction. A third column was simultaneously to invade the Cuttack--(Map 1).

In the south 3,500 men were detailed to guard Hyderabad and Poona, 8,000 under General Stuart were to act as a kind of central reserve in the area between the Kistna and Tangbadra rivers (map 2), 7,000 were to operate in the Guzerat, about 8,000 under Stevenson were to guard the northern portion of the territory of the Nizam co-operating with Wellesley, who with 9,600 was to advance in a north-easterly direction from Ahmednagar.

It is a maxim of war that concentration of effort can alone lead to success. The dissemination of the forces of the British therefore requires explanation.

The reasons were probably two-fold. In the first place the troops were already scattered and to concentrate them would, if possible at all, have occupied time which was not available. In the second it is more than likely that difficulties of supply would have precluded operations along a single line with a large force. Again concentric operations however dangerous against highly organized armies under educated commanders, owing to the risk that is run of defeat in detail, are less objectionable in warfare against the forces of semi-civilised communities. In these forces leaders rarely possess the instinct which should prompt them to concentrate effort against one of the separated portions of the enemy's army, and more usually divide their armies with the object of safeguarding territory, and therefore play into his hands.

Concentric movements are also of advantage in bringing the enemy to battle, since action with one of the converging forces can hardly be avoided. Moreover, the whole hostile territory is overrun



and the burden of war is felt by the whole of the inhabitants, and at the same time one's own territory is to a great extent secured against raids.

Active operations in the southern theatre of war began during what should have been the height of the monsoon. The rainfall of 1803 proving however to be below the normal quantity, the rivers of the Deccan were flooded only for brief periods and consequently did not offer an effective obstacle to military operations, nor was the state of the roads, except for short periods, such as seriously to impede marching. On the other hand the grass and other crops were in quality and quantity much below the average, and as in addition the area in which Wellesley and Stevenson operated had for some time been subject to the ravages of the Mahratta horsemen, it became necessary to import supplies from great distances.

In these circumstances recourse to the system of maintaining a continuous flow of supplies along the stages of a carefully guarded line of communication would obviously have resulted in absorbing the whole of Wellesley's and Stevenson's small forces in its defence. Resort was therefore had to a plan of through convoys, large convoys being from time to time despatched by Stuart from the Kistna, with sufficient escort, and marching right through to Wellesley. The arrangement was however not without certain disadvantages, for Wellesley's freedom of action was considerably reduced by the necessity of waiting on the movements of his convoys, and at the same time their liability to interception rendered the maintenance of the force somewhat precarious.

On the 8th August, taking advantage of a break in the monsoon, Wellesley commenced operations by marching against Ahmednagar with 1,700 cavalry, and 7,000 infantry, besides 5,000 irregular horse drawn from Mysore, Hyderabad, and other places.

The pettah, though enclosed by a formidable wall of mud and garrisoned by a regular battalion, some horse, and a body of Arab mercenaries, was stormed on the same day, an achievement which produced a considerable effect on the *moral* of the two armies, for the Mahrattas and Arabs had boasted of their ability to hold it against all comers.

On 9th Wellesley reconnoitred the fort, considered to be one of the strongest places in India; on the next day a battery was opened and on the 11th the garrison, doubtless still under the influence of the easy capture of the pettah, surrendered, thus proving that real strength of fortifications lies not in the height of the parapets and depth of the ditches but in the stoutness of the hearts of those who defend them. Wellesley now learnt from Stevenson that though Aurangabad, Daulatabad, and other towns were held by the enemy, the main body of the Mahrattas was still lying north of the range of Ghauts, which runs eastward past Manmad and constitutes the northern boundary of the dominions of the Nizam. He at once determined to press forward with the object of carrying the war into the enemy's country, and on 14th August despatched the cavalry to

a village on the Godavery called Toka, with orders to take measures to secure the passage of the river, and to collect or cause to be built sufficient boats of wicker and daub, covered with skins, to enable the army to cross the stream should it prove to be in flood.

The infantry followed four days later, and after crossing the Nimdarah Ghaut and traversing an area which had been devastated by the Mahrattas, reached Toka on 22nd, where the river was found to be nearly 200 yards wide and 10—12 feet deep, whilst the boats available were not sufficient to accommodate the force.

All hands were immediately turned to boat building, with the result that sufficient craft for the passage of the army were soon constructed and the troops safely ferried across on the 24th.

Meanwhile Wellesley was without information as to the movements of the enemy and possessed but imperfect means of obtaining it. As he wrote in a memorandum on this subject—"the information which we obtain regarding the position of the enemy whom we intend to attack is in general very imperfect. We cannot send out the trained scouts in the Company's service because, being inhabitants of the Carnatic or Mysore, they are as easily distinguished in this part of the country as if Europeans; and we cannot view their positions ourselves till we bring up the main body of our armies because the enemy is always surrounded by large bodies of horse. The consequence is that we are obliged to employ natives of the country and to trust to their reports."

Whilst Wellesley had been engaged in arrangements for the passage of the Godavery the Mahrattas had not been idle, for leaving their irregular infantry near the Adjunta to contain Stevenson, Scindia and Bhonsla had moved with their cavalry into the territory of the Nizam, and had advanced towards Jalna with the double object of raiding and of harassing the communications between Wellesley and Stuart.

Their plan of campaign, adopted at the instance of Bhonsla, was apparently to follow the troublesome precedent set by Tippoo in the wars between the Madras Government and Mysore, and to carry out an extensive series of raids into the territory of the Nizam. Battle was to be avoided until the British had exhausted themselves in the vain attempt to follow the movements of the Mahrattas, or until their depredations had in self-defence forced the Nizam to join their cause.

Such projects though doubtless plausible and attractive to those who aim at obtaining great advances with but little risk are inherently unsound. For a time the enemy may be placed in difficulties, but the fact of avoiding a decision when it should be sought must react unfavourably on the *moral* of an army, which if accustomed to shun battle will not, when the moment arrives, remain steadfast in the crisis of an action.

So many days had now elapsed since the receipt of the news that the Mahrattas were north of the Ghauts that after crossing the Godavery the British General was in some doubt how to proceed.

In circumstances of this nature the best plan usually is to move on some locality which the enemy is likely for his own security to defend, or if he fails to do so will suffer serious injury from its abandonment. In the first case he will be forced to conform to our movements, abandoning his own plans, in the second he will equally be at a disadvantage.

Such a locality was to be found in the Adjunta Pass, which was the most practicable of the passes leading from the territory of Scindia towards Aurangabad and Daulatabad.

Whether Wellesley intended to adopt some such project is not known, but on 28th August he advanced to Jalgaon, and the next day reached Aurangabad, which had been evacuated by the enemy, though a garrison had been thrown into the fort at Jalna.

Leaving a small detachment in Aurangabad the British marched on 30th in the direction of Jalna, halting at Bulgaon, and on 31st the force moved to Baumungun.

Here news was received that the Mahratta army was at Kalgaon to the south of Jalna, and that rumours were current that it was the intention of Scindia either to advance on Hyderabad or to interrupt the communications between Wellesley and Stuart.

Wellesley was now confronted with one of those dilemmas which make war so difficult an art to practise with success. Should he follow the enemy and in doing so perhaps act as the enemy desired; should he remain passive and allow the Mahrattas to ravage at will the territory of the Nizam and alienate that monarch from the British; or should he make a counter-attack into Mahratta territory in the hope that this would draw the Mahrattas after him?

Each course possessed serious drawbacks, and in such circumstances it is best to select the plan which promises the greatest advantages to oneself and will be most disadvantageous to the enemy. These conditions were apparently fulfilled by the last of the three, but Wellesley chose a middle course, probably with the object of retaining the power directly to protect his convoys in case of need. He therefore contemplated moving to a locality where he could interpose between the Mahratta cavalry and the infantry which was still near the Ghauts, in the hope of drawing the former northwards again.

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one battalion of infantry, in the same direction, the rest of the troops remaining at Donegaon, where there was a fort, to form a rallying point for the convoy.

No sooner had this memorandum been written than Wellesley received information that the enemy had advanced so far in a south-easterly direction that the projected operations would be unlikely to exercise any influence on their movements. The orders were therefore cancelled, and on 1st September Wellesley moved slowly to Untenvalli with the object of picking up his convoy. He had apparently now resolved that if the Mahrattas continued to move towards Hyderabad he would try and draw them back by means of a counter-attack to be delivered by Stevenson against the fort of Gawalgarh, (Jawalgarh on Map 2), and the city of Nagpur, whilst he himself followed the raiders.

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No important developments having occurred in the meanwhile, Wellesley marched on 15th to Govandy to meet his long expected convoy which came safely into camp on the following day.

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The project was undoubtedly hazardous, for separation of the two British forces by a rugged range of mountains was contemplated. In war, however, decisive success is not gained without some risk of failure, and the extent of the danger which is incurred is measured not by the actual form of the operation but by the character and fighting value of the enemy. No just appreciation of the merits of a plan can therefore be made apart from the circumstances in which it was conceived and executed. In any case the object of a commander should be so to plan his operations that if successful the greatest advantage will be gained irrespective of the consequences of possible failure. Each blow should therefore be so aimed and delivered that the enemy will be forced to parry it and to conform to

the movements of the attacker, abandoning his own plans. This will be the case when the security of the enemy's line of communication is in question.

Wellesley's plan then was in the circumstances perfectly sound so far as it was calculated to bring the enemy to action in conditions which promised that success, if gained by the British, would be decisive. On the other hand the project, based as it was on apparently not very trustworthy information, must be condemned, nor was it sound to rely for success on the exact timing of a series of operations, which were to extend over several days, when some unforeseen movement by the enemy might produce a radical change in the whole situation.

Wellesley appears however to have changed his mind, for on 21st he marched northwards to Sailgaon, only a short distance from the camp of Stevenson, and here the two leaders met and concerted a new plan.

The physical characteristics of the area in which the British were now concentrated were as follows :—

Some three to five miles north of Jalna and Budnapur stretches an almost continuous line of low hills extending for many miles both to the east and west. Flat topped and with steep sides, the hills are covered with loose stones and rocks, and in many places are also overgrown with scrub jungle. In the few localities, where the water in draining away has worn a passage through them, are found shallow valleys from two to three miles wide, and on the banks of the little streams stand here and there fortified villages, each with a massive keep of sun-dried mud in its centre. Connecting these hamlets were rugged paths or tracks, the best if not the only means of crossing the hills, which though quite practicable when dry became almost impassable in wet weather by troops. North of Jalna the hill belt is narrowest, being not more than five miles in depth, but at Budnapur it extends for quite twice that distance.

Beyond the hills lies a great rolling plain with long undulations which run from three to four miles apart and generally speaking in a north-easterly and south-westerly direction, and here the higher ground is covered with grass of poor quality growing amidst a scanty crop of low bushes. Apart from its undulations the plain is featureless even to monotony, except where here and there a great tree rears itself above the surrounding scrub, or a little knoll crowns the summit of a rise. Between the undulations flow small streams, and on their banks stood a number of villages in the midst of half cultivated fields, sheltering within their walls such cattle as had escaped the marauders.

The plan now agreed to by Wellesley and Stevenson was in character not dissimilar to that which has been described, involving first separation, then simultaneous advance along two lines across the hills, thus closing the routes by which the enemy might again attempt to break southwards, and finally convergent advance against the Mah-ratta army, the main body of which was believed to be at Bokerdun.

Stevenson was to march due north with the 3rd and 6th Native Cavalry, the Scots Brigade or 94th, the 2/1, 1/6, 2/7, 2/9, 1/11, 2/11 Native Infantry, and 12 guns, some 8,000 of all ranks. Wellesley with a force reduced by detachments to about 4,500 men, consisting of the 19th Light Dragoons, the 4th, 5th, and 7th Native Cavalry, the 74th and 78th Highlanders, the 1/2, 1/4, 1/8, 1/10, 1/12, and 2/12 Madras Infantry, with 17 guns and some irregular cavalry, was to march eastwards to Jalna and then north by the Kundulka valley to Donegaon, by a road 12 miles from that to be followed by Stevenson. Apparently no special arrangements were made to insure close communication between the two forces, and as signalling had not come into use and the hills were too rugged to admit of rapid despatch riding, Wellesley and Stevenson, until the hills had been crossed, could only exchange news by sending messengers round *viâ* Jalna. It is moreover not clear why, if separation was intended, Wellesley first concentrated his forces, an operation which, though it might mislead the enemy, occupied time, and was therefore calculated to prejudice any prospects that existed of surprising them.

Whilst Wellesley was concerting plans to bring the enemy to battle, the Mahrattas were lingering in the rolling plain south of the Adjunta, their right at Bokerdun, their left with which were reinforcements of two infantry brigades under the Frenchmen Pohlmann and Dupont, numbering some sixteen battalions, near Assaye.

On 22nd Wellesley marched eastwards and then north, halting probably near Donegaon. The next day the force broke camp at about 6 A.M., the intention being to continue to move in a northerly direction, halting at the village of Nulni, or Nauliah, some 16 miles distant, and reported to be 14 miles south-east of the enemy's camp at Bokerdun (Bokendun on Map 2).

The fighting troops duly reached Nulni at about 11 A.M., and the men were about to prepare camp when Wellesley's Madrassi scouts brought in news that the Mahrattas were in force at Assaye, not more than six miles away. In addition information was obtained from the villagers that on hearing of Wellesley's approach Scindia and Bhonsla had marched away northwards with their cavalry, leaving some 10,000 regular, and about the same number of irregular infantry in camp at Assaye.

Wellesley was now in a difficult position. The weather was hot, his troops had already been under arms for five hours, and the baggage could not reach Nulni for some time. The enemy was believed to be aware of the presence of the British, and as any hesitation on the part of Wellesley was sure to be construed as a sign of weakness by the Mahrattas, inaction would result in both camp and baggage being subjected to minor attacks if nothing more serious, which would raise the *moral* of the enemy and lower that of the British. The enemy's cavalry, moreover, was said to be moving away, possibly to attack Stevenson, possibly to avoid battle, in either case Scindia's intentions could only be discovered by vigorous action calculated to force him to disclose his dispositions. On the other

hand if the reports of the natives were to be believed, the Mahratta infantry lay within six miles of the British, and might therefore, if Wellesley acted with promptitude, be brought to action or at least forced to retire in disorder.

Wellesley accordingly resolved to attack at once, a decision which stamped him as a commander of more than ordinary merit, for a lesser man, weighing the risks and disadvantages against the probable gains, would have considered that his men were too weary to justify the hope that they would render the best account of themselves, and that in these circumstances to attempt to force the enemy to battle would be both futile and hazardous; that to leave the baggage would be unjustifiable having regard to the enemy's superiority in cavalry, and lastly that in the event of failure public opinion would inevitably blame him as a rash and incompetent leader who led tired troops into action.

Sending word to Stevenson, reported to be from 8—10 miles distant, and clear of the hills, of his intention, and directing his baggage to park at Nulni under escort of a battalion and 400 details, Wellesley rode forward with his cavalry to make a personal reconnaissance, ordering the remainder of the troops to follow.

After riding about four miles the summit of some rising ground was reached, and now the whole of the enemy's army came into view in the valley beyond—(Map 3).

The Mahrattas were seen to be drawn up in battle array on the far side of a line of trees and villages indicating the presence of a stream, which three or four miles eastwards was apparently joined by another stream flowing behind the enemy's line.

Wellesley, from his knowledge of the country, would have inferred that both streams flowed over shallow sandy beds, in channels forty to fifty yards wide enclosed by banks ten to twelve feet high; and that they were passable at all points to skirmishers or single horsemen, but would present a serious obstacle to troops accustomed to manœuvre in close formations. He would also have been aware that the area near the rivers would be broken up by a number of small nullahs.

A well defined feature, from which the ground fell in many undulations but at a moderate general gradient to the two streams, would have been observed about a mile from their junction running from a village—Assaye—north and south across the delta.

On this feature rested the left of the Mahratta army, composed of the bulk of the infantry and artillery, on the right being the main body of the cavalry, though a considerable number of horsemen were also on the right bank of the nearer stream called the Kaitna, thus preventing close reconnaissance of its course. The whole force was estimated at 40,000—50,000 men with 100 guns.

Enquiry from guides native to the locality elicited the statement that no fords existed opposite the enemy's position, but Wellesley doubting the accuracy of these assurances resolved to make a close inspection of the Kaitna for himself, and directed his cavalry to



advance down the gentle undulations which separated the British from the river and to drive back the enemy's cavalry. This accomplished he was able to approach sufficiently near to observe that two villages, Pipalgaon and Warur, which from the hill seemed to be one place, lay opposite one another on different banks of the Kaitna and near its junction with the other stream, called the Juah.

Assuming that where two villages lay on opposite banks of a stream a ford would probably be found, Wellesley concluded that his army could pass the Kaitna at that point.

The next consideration was how to utilise the topographical features to the best advantage in the impending battle.

The presence of the delta, the fact that the enemy's army was drawn up behind a stream which could be passed only with difficulty if at all in its immediate front, and the lack of manœuvring power usually possessed by the large but inorganic armies of the native chiefs, suggested a plan to Wellesley.

He saw that if, as appeared possible, he could without interference from the enemy throw his little force over the Kaitna at Pipalgaon, his army would be placed at right angles to that of the enemy and in position to roll it up if in its present position, or to attack at an advantage if the Mahrattas were caught attempting to change front to meet the British; that even if the enemy were able to change front in time to meet him they would not find space to deploy the whole of their troops in the delta, and that the presence of the two streams would effectively protect the flanks of the British from the enterprises of the numerically superior cavalry of the enemy.

The plan was bold, involving as it did a flank march across the enemy's front, but Wellesley doubtless argued that if the Mahrattas attempted to cross the Kaitna in force in order to interfere with his movements they could be attacked with advantage whilst astride the stream. Once across the Kaitna defeat would, however, have involved the utter destruction of the British, who would have been driven into the streams in front of which they proposed to fight.

A commander, as did Wellesley, should however regard the difficulties of the enemy rather than his own, and the advantages rather than the drawbacks of a plan, and in this light little fault can be found with Wellesley's proposal, except that its accomplishment depended on the apparently unconfirmed inference as to the existence of a ford at Pipalgaon.

The infantry did not reach the summit of the rise until 1 P.M., having then marched in all about 20 miles.

Soon afterwards Wellesley commenced the advance, the European infantry leading, followed by the Native infantry, whilst the regular cavalry covered the left and rear and the irregular cavalry the right.

The action of the regular cavalry, which manœuvred towards the Mahratta line of battle, the cover afforded by scrub and by a slight but distinct re-entrant down which the infantry moved, combined for a time to deceive Scindia as to the significance of the operations of the British.

When he at last fathomed the intentions of Wellesley, Scindia instead of rapidly throwing troops into Pipalgaon which had not been occupied, contented himself, as Wellesley had anticipated, with conforming to the movements of his enemy. He therefore changed the position of his infantry whose right was brought on to the Kaitna, where a line of guns was placed, the front being along the ridge leading to Assaye, the left in and round this village, which was strongly garrisoned and defended by a number of guns.

Meanwhile the head of Wellesley's column safely reached Pipalgaon, where a narrow ford was found unoccupied by the Mahrattas.

Piquets, or advanced guards, were at once thrown across the stream to cover the deployment of the remainder, and these immediately came under a heavy artillery fire from the ridge, which was opened and apparently maintained by the Mahrattas for the purpose of covering their change of front.

Little harm was done to the main body of the British which was able to deploy under cover in the numerous undulations and hollows of the ground, but the narrowness of the ford and the caution imposed by the enemy's fire so far delayed the deployment that it was not until 3 P.M. that it was completed, by which time the Mahrattas were firmly established in their new position.

Wellesley had drawn up his little force in three lines. On the left of the first stood the 78th regiment with three Native battalions on its right, the second line was composed of two Native battalions on the left with the 74th on the right, behind these were placed in third line the 19th Light Dragoons and the three regiments of Native cavalry, for whose action there was no immediate scope.

The Mysore and other irregular horse remained beyond the Kaitna to await events.

Wellesley's hopes of being able to roll up the enemy's forces or to attack them whilst in the act of changing position having been disappointed owing to the slowness of the British deployment, it became necessary to modify the original conception.

Assaye, strongly held and surrounded by a formidable wall, was doubtless what some would describe as the key of the position. Like many similar localities its strength however afforded so little prospect of successful attack that Wellesley resolved to deliver the decisive attack elsewhere.

Judging that the garrison would neither be able easily to sally from Assaye nor willing to do so, he decided to contain it by a demonstration and to attack the enemy's right, driving the Mahrattas back into the Juah.

At 3 P.M. the order to advance was given, and the guns, which had been placed in the British centre and left, moved up the slope covered by the piquets until they halted and came into action 400 yards from the enemy's line. At the same time the piquets on the British right, contrary to orders for they had been directed to keep out of effective range, commenced a fire action with the troops near and in Assaye. The fire of the British artillery proving ineffective,

an attempt was made to advance closer to the enemy's line, but this was immediately checked by the Mahratta artillery, which in addition to killing most of the bullocks which were used to draw the artillery disabled many of the guns.

This catastrophe placed Wellesley in an unpleasant situation, and though many a leader on receiving such a report would have abandoned the enterprise, Wellesley, with splendid tenacity of purpose, decided that a bold offensive was the best way out of the difficulty and merely replied impatiently, "tell the infantry to get on without them."

On receipt of this order the 78th and the Native regiments on the left charged and captured the long line of the enemy's artillery.

The piquets on the right of the British army had meanwhile suffered so heavily from the fire of the enemy's batteries near Assaye that they began to show signs of wavering, and the 74th, which had been under cover in a fold of the ground, was ordered up to their support.

This regiment no sooner entered the fire swept zone than it dashed impetuously against Assaye carrying with it the whole of the troops on the right of the first line.

The attack failed, but worse still Scindia, quick to recognise his opportunity, poured a torrent of Mahratta horsemen from the north of Assaye against the shaken troops.

Then, as happens in almost every action, the issue hung in the balance, for the right wing of the British seemed about to disintegrate, but Maxwell, the cavalry brigadier, was equal to the occasion, and ordering the 19th and the 4th Native Cavalry to charge, he first drove back the enemy's horsemen and then rode into the enemy's infantry driving a portion of the left across the Juah where the cavalry followed in pursuit.

Matters were thus for the moment righted, but Wellesley had been forced to expend half of his slender reserve of mounted troops, and to quote his own words, "though the cavalry saved the remains of the 74th and of the piquets it was brought into the cannonade, horses and men were lost, it charged amongst broken infantry, its unity was gone, and it was no longer possible to use it, as I had intended when I placed it in third line, to pursue the enemy."

Wellesley in accordance with his plan of action now wheeled his victorious left and centre to the right, driving the bulk of the enemy's right and centre before him to the Juah, though a considerable body of the enemy, including Pohlmann's troops, retired along the Kaitna.

The British infantry however pressed on towards the Juah, indifferent to all but the masses to their front, even leaving the captured guns where they stood. Seeing this, numbers of the Mahrattas who had fallen back along the Kaitna commenced to advance again, and to fire into the backs of the British, as did many of the wounded who after pretending to be dead rose up when the troops had passed and emptied their weapons at them.

This sudden fire from an unexpected direction combined with the disorder necessarily consequent on a victorious advance, checked the forward movement and produced some hesitation in the ranks. But Wellesley again restored the fight, for calling to him the 74th and the 7th Native Cavalry he dispersed the Mahrattas, some of whom had even retaken possession of the guns.

Meanwhile under cover of the troops in Assaye and in spite of the pressure of the British, many of the Mahrattas succeeded in crossing and reforming on the left bank of the Juah.

Assaye was however soon afterwards captured, when the bulk of the Mahrattas withdrew northwards along the left bank of the Juah. Colonel Maxwell, who had now recrossed the Juah and reformed his cavalry, was killed soon afterwards in leading it against Pohlmanns brigade, still standing in the space between the two rivers, and the charge was easily repulsed. Pohlmann then retired, but the Mahratta horsemen, who were by no means done with, continued to hang about the field until nightfall.

During the night the enemy withdrew about 12 miles and then halted.

Hearing however that Stevenson was marching against them they fell back next morning over the Adjunta Pass.

The Mahrattas left on the field 1,200 dead besides 102 guns, but the British losses were exceptionally heavy amounting to 79 officers and 1,778 others killed and wounded out of 4,500 present, that is to say, the casualties amounted to nearly 40 per cent.

On receipt of Wellesley's message, which came to hand on the evening of 23rd, that he was about to attack the enemy at Assaye, Stevenson at once put his troops in motion to join Wellesley, but losing his way in the hills found himself at 8 A.M. on 24th at Bokerdun, eight miles from Assaye.

A bolder leader would have marched direct to the Adjunta to cut off the enemy's retreat, for it must have been evident that no prospect existed of arriving at Assaye in time to influence the issue of the action. If Wellesley gained a victory the presence of Stevenson at the Adjunta would probably have been decisive, and in case of disaster to Wellesley, Stevenson would have been in no worse position at the Adjunta than if near Assaye.

As it was Wellesley's camp was not reached until nightfall on 24th and with the men in so exhausted a condition that they were unfit to move again until 26th September.

On this date Stevenson was sent in pursuit of the Mahrattas, and soon fell in with their infantry, which retired hastily across the Tapti and thence to the Nerbudda.

Wellesley was unable to advance until provision had been made for the safety of his numerous wounded, a matter of some difficulty, for to have left them in an unfortified locality would have necessitated a considerable detachment for their security against raiders, and the Nizam refused admittance to a suitable place, which had been selected, *viz.*, the large and almost impregnable fortress of

Daulatabad. Finally hospitals and a convalescent dépôt were established at the Adjunta, where the Mahratta cavalry could operate only with difficulty and the presence of the escort would serve to secure this important avenue.

Meanwhile the main body of the Mahratta cavalry had marched westwards along the Tapti, but instead of attempting pursuit Wellesley, with the object of drawing the Mahrattas to their relief, ordered Stevenson first to levy a contribution on Barhanpur and then to join him and lay siege to the fortress of Assirgarh.

This plan was in part successful, for news soon came in that Scindia and Bhonsla, leaving their infantry on the Nerbudda, had marched southwards from the Tapti apparently with the intention of invading the dominions of the Peishwa as a counter move calculated to divert the whole or part of Wellesley's army from the siege of Assirgarh. The calculations of the Mahrattas were justified, for Wellesley on seeing that his communications with Stuart were menaced, at once left Stevenson to prosecute the siege, and on 11th October marched to Binkenhaly, some ten miles south of the Adjunta, where he remained until the 15th awaiting definite information.

News now came to hand from which it was to be inferred that the enemy had doubled back and was marching to attack Stevenson; whereupon Wellesley returned to the Adjunta on 18th and crossed the pass on the following day. Scindia thereupon halted at Ahuna, on the Tapti, and about three marches from Barhanpur.

Stevenson had meanwhile occupied Barhanpur on 15th October and two days later invested Assirgarh, which surrendered on 21st, the garrison accepting a bribe of Rs. 20,000 offered by Stevenson, in addition to their freedom and the security of their private property.

News of this success only reached Wellesley on 24th and at the same time he learnt that Bhonsla had not accompanied Scindia in this march to the relief of Assirgarh, but was still advancing southwards towards the British communications.

Whilst Wellesley moved in pursuit of Bhonsla, Stevenson was ordered to watch Scindia, who was no longer considered to be formidable, and to make preparations for using the stores captured at Assirgarh for the siege of Gawalgarh in Berar.

Recrossing the Adjunta on 25th October, Wellesley passed Aurangabad on 29th, where he came on to the track of Bhonsla, who was engaged in ravaging the area between this city and the Godavery.

Wellesley at once proceeded to press the Mahrattas so hard that they were obliged to change their camp no fewer than five times in three days to avoid fighting an action.

Meanwhile supplies had again run low, and as another large and important convoy was expected, Wellesley was for the second time placed in the dilemma of being obliged to choose whether he would follow the Mahrattas or move in such direction as to protect his convoy.

one battalion of infantry, in the same direction, the rest of the troops remaining at Donegaon, where there was a fort, to form a rallying point for the convoy.

No sooner had this memorandum been written than Wellesley received information that the enemy had advanced so far in a southeasterly direction that the projected operations would be unlikely to exercise any influence on their movements. The orders were therefore cancelled, and on 1st September Wellesley moved slowly to Untenvalli with the object of picking up his convoy. He had apparently now resolved that if the Mahrattas continued to move towards Hyderabad he would try and draw them back by means of a counter-attack to be delivered by Stevenson against the fort of Gawalgarh, (Jawalgarh on Map 2), and the city of Nagpur, whilst he himself followed the raiders.

The next day the force under Wellesley reached Pipalgaon on the Godavery, and on 3rd the river, which was now fordable, was crossed at Rakisbaum, in order that when the supplies came to hand the troops would be ready if necessary to march at once on Hyderabad in pursuit of Scindia.

Meanwhile Stevenson advanced on 1st to Jalna, and the next day captured from the Mahratta garrison the fort, a large bastioned enclosure surrounded by walls 20 feet high and 6 feet thick.

Scindia's raid had however already proved a failure owing to the fact that the crops were so low and backward that little harm could be done to them, nor could the horsemen make any impression upon the walled villages into which the cattle had been driven.

These experiences together with the news of the fall of Jalna caused him hastily to return to Partur. Here he halted, and in response to the representations of some of his own chieftains who were disgusted with the pusillanimous policy which had been pursued, called up three brigades of infantry from the Adjunta with the object of offering battle to the British.

On hearing of the advance of the Mahratta infantry from the Adjunta, Stevenson, jumping to the conclusion that Aurangabad was in danger of attack, moved to Budnapur, thus leaving open the road by which the infantry could most conveniently join Scindia.

The object of the British being presumably to keep apart the two Mahratta forces and to defeat them in detail, Stevenson, if he moved at all, should have advanced on the Adjunta, which would probably have forced the enemy's infantry either to fall back over the pass or to accept battle. The best plan would however have been to have retained his position between the divided forces of the enemy until Wellesley had decided on some definite plan such as a converging movement on one, or a simultaneous advance against both of the hostile forces.

As Wellesley remarked, Stevenson's march was unfortunate, but he added that it was to be hoped that the apparent retirement of the British would be construed by the enemy as a sign of weakness and would therefore induce them to stand and fight a battle.

joining a force commanded by a brother of Bhonsla and including the bulk of the Raja's regular infantry, together with a considerable body of horse.

Thus at the end of November there were four armies in Berar and those of the Mahrattas stood between Stevenson and his objective. Wellesley now decided to concentrate his forces for a decisive battle, ordering Stevenson to rendezvous at a place called Parterly, some 50 miles from Ballapur and reported to be the locality where the enemy were lying.

This arrangement was not without obvious disadvantages, for the Mahrattas were deliberately afforded an opportunity of defeating the British in detail. On the other hand a converging movement offered most promise of bringing the enemy to action, and Wellesley's previous experience had not been such as to inspire him with great respect for the martial qualities of the Mahrattas.

Any operation of war must in fact, as has been pointed out, be judged quite as much in relation to the local circumstances in which it was carried out as in regard to its theoretical soundness in the abstract, and movements which are justifiable against opponents of moderate calibre cannot without undue danger be attempted against those who are really formidable.

So well was the concentration timed that the two forces met on the 29th November at Parterly.

As Wellesley wrote: "It was an extraordinary and fortunate circumstance that after Colonel Stevenson and I had been separated for two months at a distance of 300 miles, I should join him on the very morning of the engagement, and that he was only obliged to wait for me one day (on 28th at Hutti Andorah). But the operations of this war have afforded numerous instances of improvement in our means of communication, of obtaining intelligence, and above all of movement."

Wellesley now found himself in command of about 18,000 fighting troops, including three British infantry battalions—74th, 78th, and 94th or Scots' Brigade; on the other hand contact with the enemy had been lost, for they had disappeared on the approach of the British.

On ascending a tower to reconnoitre, Wellesley saw about six miles away to the north, in the plain covered with standing corn, a confused mass of men and animals which he concluded to be their armies in movement.

The situation resembled that before the battle of Assaye, but on this occasion Wellesley's troops had marched 26 miles and those of Stevenson 20 miles, and the day was very hot. Wellesley therefore decided not to pursue.

Hardly had the order been given than at about 2 P.M. as the troops were settling down into camp, the Mahratta irregular horse attacked some Mysore cavalry who were on outpost duty.

Wellesley at once pushed out infantry piquets to support the cavalry, accompanying them himself, and after advancing three miles

the movements of the attacker, abandoning his own plans. This will be the case when the security of the enemy's line of communication is in question.

Wellesley's plan then was in the circumstances perfectly sound so far as it was calculated to bring the enemy to action in conditions which promised that success, if gained by the British, would be decisive. On the other hand the project, based as it was on apparently not very trustworthy information, must be condemned, nor was it sound to rely for success on the exact timing of a series of operations, which were to extend over several days, when some unforeseen movement by the enemy might produce a radical change in the whole situation.

Wellesley appears however to have changed his mind, for on 21st he marched northwards to Sailgaon, only a short distance from the camp of Stevenson, and here the two leaders met and concerted a new plan.

The physical characteristics of the area in which the British were now concentrated were as follows :—

Some three to five miles north of Jalna and Budnapur stretches an almost continuous line of low hills extending for many miles both to the east and west. Flat topped and with steep sides, the hills are covered with loose stones and rocks, and in many places are also overgrown with scrub jungle. In the few localities, where the water in draining away has worn a passage through them, are found shallow valleys from two to three miles wide, and on the banks of the little streams stand here and there fortified villages, each with a massive keep of sun-dried mud in its centre. Connecting these hamlets were rugged paths or tracks, the best if not the only means of crossing the hills, which though quite practicable when dry became almost impassable in wet weather by troops. North of Jalna the hill belt is narrowest, being not more than five miles in depth, but at Budnapur it extends for quite twice that distance.

Beyond the hills lies a great rolling plain with long undulations which run from three to four miles apart and generally speaking in a north-easterly and south-westerly direction, and here the higher ground is covered with grass of poor quality growing amidst a scanty crop of low bushes. Apart from its undulations the plain is featureless even to monotony, except where here and there a great tree rears itself above the surrounding scrub, or a little knoll crowns the summit of a rise. Between the undulations flow small streams, and on their banks stood a number of villages in the midst of half cultivated fields, sheltering within their walls such cattle as had escaped the marauders.

The plan now agreed to by Wellesley and Stevenson was in character not dissimilar to that which has been described, involving first separation, then simultaneous advance along two lines across the hills, thus closing the routes by which the enemy might again attempt to break southwards, and finally convergent advance against the Mah-ratta army, the main body of which was believed to be at Bokerdun.



Since the direction of its advance should have brought Wellesley's force almost into the position which at Assaye he had manœuvred to gain, that is in prolongation of the enemy's line, but in this case also covering his own camp, his deliberate abrogation of this advantage can probably be ascribed to the desire to tempt the enemy to stand and give battle, for manœuvre in the corn fields should have presented no insuperable difficulties.

The fact that the whole of the infantry were deployed lends colour to this supposition, for these dispositions, though doubtless made with the object of presenting a frontage as nearly as possible equal to that of the Mahrattas, argued complete confidence in the ability of the British to gain victory.

The locality selected for the deployment of Wellesley's troops was as it proved not only within artillery range of the enemy's guns but the distance was accurately known to his gunners, who had evidently marked the village of Sirsoni. As a result no sooner did the head of the column, a Native battalion with some guns, appear in front of the village than the Mahrattas opened so rapid and effective a fire with their guns as soon threw into confusion the drivers and cattle of the guns as well as the three leading battalions of Native infantry who had rendered good service at Assaye.

The Mahrattas failed to seize the opportunity provided by their gunners, and under cover of his artillery, which came into action on each side of the village, Wellesley was able to rally the wavering regiments behind the village and to lead them, behind the 74th and 78th, who had meanwhile deployed, to their place on the right of the line.

Stevenson having at the same time deployed on the left of the village, the signal was given to advance, the 74th and 78th, who formed the right centre, being somewhat in advance of the remainder.

When these regiments were about 100 yards from the enemy they were charged by a mass of Arab footmen who rushed out from behind a battery and under cover of the smoke of its guns. Though the attack was pressed home with fanatical fury the Arabs could make no impression on the two European regiments and perished almost to a man. Simultaneously a charge was made by Scindia's cavalry against the left of the British line but was checked by the fire of the 1/6th Madras Infantry, when three regiments of Madras cavalry by an opportune charge drove the Mahratta horsemen from the field. Seeing the defeat of their cavalry and the extermination of the Arabs, the remaining troops began to abandon their positions and were soon in total rout.

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It is also shown that prompt attack, whatever the odds, is the best policy in warfare of this character.

The third lesson is that when operating in an inhospitable or devastated region a commander must usually choose between the risk of starvation, if his force is concentrated, or defeat in detail if his troops are dispersed for purposes of subsistence.

It is however to be remembered that if one army cannot for long exist when concentrated neither can the other, and that little real danger of defeat is run when each detachment is capable of resisting the main force of the enemy, until the remainder of the army can directly or indirectly bring effective pressure to bear on him.

On the other hand the smallest error may prove fatal when so formidable an opponent as starvation is in question.

When he at last fathomed the intentions of Wellesley, Scindia instead of rapidly throwing troops into Pipalgaon which had not been occupied, contented himself, as Wellesley had anticipated, with conforming to the movements of his enemy. He therefore changed the position of his infantry whose right was brought on to the Kaitna, where a line of guns was placed, the front being along the ridge leading to Assaye, the left in and round this village, which was strongly garrisoned and defended by a number of guns.

Meanwhile the head of Wellesley's column safely reached Pipalgaon, where a narrow ford was found unoccupied by the Mahrattas.

Piquets, or advanced guards, were at once thrown across the stream to cover the deployment of the remainder, and these immediately came under a heavy artillery fire from the ridge, which was opened and apparently maintained by the Mahrattas for the purpose of covering their change of front.

Little harm was done to the main body of the British which was able to deploy under cover in the numerous undulations and hollows of the ground, but the narrowness of the ford and the caution imposed by the enemy's fire so far delayed the deployment that it was not until 3 P.M. that it was completed, by which time the Mahrattas were firmly established in their new position.

Wellesley had drawn up his little force in three lines. On the left of the first stood the 78th regiment with three Native battalions on its right, the second line was composed of two Native battalions on the left with the 74th on the right, behind these were placed in third line the 19th Light Dragoons and the three regiments of Native cavalry, for whose action there was no immediate scope.

The Mysore and other irregular horse remained beyond the Kaitna to await events.

Wellesley's hopes of being able to roll up the enemy's forces or to attack them whilst in the act of changing position having been disappointed owing to the slowness of the British deployment, it became necessary to modify the original conception.

Assaye, strongly held and surrounded by a formidable wall, was doubtless what some would describe as the key of the position. Like many similar localities its strength however afforded so little prospect of successful attack that Wellesley resolved to deliver the decisive attack elsewhere.

Judging that the garrison would neither be able easily to sally from Assaye nor willing to do so, he decided to contain it by a demonstration and to attack the enemy's right, driving the Mahrattas back into the Juah.

At 3 P.M. the order to advance was given, and the guns, which had been placed in the British centre and left, moved up the slope covered by the piquets until they halted and came into action 400 yards from the enemy's line. At the same time the piquets on the British right, contrary to orders for they had been directed to keep out of effective range, commenced a fire action with the troops near and in Assaye. The fire of the British artillery proving ineffective,

an attempt was made to advance closer to the enemy's line, but this was immediately checked by the Mahratta artillery, which in addition to killing most of the bullocks which were used to draw the artillery disabled many of the guns.

This catastrophe placed Wellesley in an unpleasant situation, and though many a leader on receiving such a report would have abandoned the enterprise, Wellesley, with splendid tenacity of purpose, decided that a bold offensive was the best way out of the difficulty and merely replied impatiently, "tell the infantry to get on without them."

On receipt of this order the 78th and the Native regiments on the left charged and captured the long line of the enemy's artillery.

The piquets on the right of the British army had meanwhile suffered so heavily from the fire of the enemy's batteries near Assaye that they began to show signs of wavering, and the 74th, which had been under cover in a fold of the ground, was ordered up to their support.

This regiment no sooner entered the fire swept zone than it dashed impetuously against Assaye carrying with it the whole of the troops on the right of the first line.

The attack failed, but worse still Scindia, quick to recognise his opportunity, poured a torrent of Mahratta horsemen from the north of Assaye against the shaken troops.

Then, as happens in almost every action, the issue hung in the balance, for the right wing of the British seemed about to disintegrate, but Maxwell, the cavalry brigadier, was equal to the occasion, and ordering the 19th and the 4th Native Cavalry to charge, he first drove back the enemy's horsemen and then rode into the enemy's infantry driving a portion of the left across the Juah where the cavalry followed in pursuit.

Matters were thus for the moment righted, but Wellesley had been forced to expend half of his slender reserve of mounted troops, and to quote his own words, "though the cavalry saved the remains of the 74th and of the piquets it was brought into the cannonade, horses and men were lost, it charged amongst broken infantry, its unity was gone, and it was no longer possible to use it, as I had intended when I placed it in third line, to pursue the enemy."

Wellesley in accordance with his plan of action now wheeled his victorious left and centre to the right, driving the bulk of the enemy's right and centre before him to the Juah, though a considerable body of the enemy, including Pohlmann's troops, retired along the Kaitna.

The British infantry however pressed on towards the Juah, indifferent to all but the masses to their front, even leaving the captured guns where they stood. Seeing this, numbers of the Mahrattas who had fallen back along the Kaitna commenced to advance again, and to fire into the backs of the British, as did many of the wounded who after pretending to be dead rose up when the troops had passed and emptied their weapons at them.

This sudden fire from an unexpected direction combined with the disorder necessarily consequent on a victorious advance, checked the forward movement and produced some hesitation in the ranks. But Wellesley again restored the fight, for calling to him the 74th and the 7th Native Cavalry he dispersed the Mahrattas, some of whom had even retaken possession of the guns.

Meanwhile under cover of the troops in Assaye and in spite of the pressure of the British, many of the Mahrattas succeeded in crossing and reforming on the left bank of the Juah.

Assaye was however soon afterwards captured, when the bulk of the Mahrattas withdrew northwards along the left bank of the Juah. Colonel Maxwell, who had now recrossed the Juah and reformed his cavalry, was killed soon afterwards in leading it against Pohlmanns brigade, still standing in the space between the two rivers, and the charge was easily repulsed. Pohlmann then retired, but the Mahratta horsemen, who were by no means done with, continued to hang about the field until nightfall.

During the night the enemy withdrew about 12 miles and then halted.

Hearing however that Stevenson was marching against them they fell back next morning over the Adjunta Pass.

The Mahrattas left on the field 1,200 dead besides 102 guns, but the British losses were exceptionally heavy amounting to 79 officers and 1,778 others killed and wounded out of 4,500 present, that is to say, the casualties amounted to nearly 40 per cent.

On receipt of Wellesley's message, which came to hand on the evening of 23rd, that he was about to attack the enemy at Assaye, Stevenson at once put his troops in motion to join Wellesley, but losing his way in the hills found himself at 8 A.M. on 24th at Bokerdun, eight miles from Assaye.

A bolder leader would have marched direct to the Adjunta to cut off the enemy's retreat, for it must have been evident that no prospect existed of arriving at Assaye in time to influence the issue of the action. If Wellesley gained a victory the presence of Stevenson at the Adjunta would probably have been decisive, and in case of disaster to Wellesley, Stevenson would have been in no worse position at the Adjunta than if near Assaye.

As it was Wellesley's camp was not reached until nightfall on 24th and with the men in so exhausted a condition that they were unfit to move again until 26th September.

On this date Stevenson was sent in pursuit of the Mahrattas, and soon fell in with their infantry, which retired hastily across the Tapti and thence to the Nerbudda.

Wellesley was unable to advance until provision had been made for the safety of his numerous wounded, a matter of some difficulty, for to have left them in an unfortified locality would have necessitated a considerable detachment for their security against raiders, and the Nizam refused admittance to a suitable place, which had been selected, *viz.*, the large and almost impregnable fortress of

Daulatabad. Finally hospitals and a convalescent dépôt were established at the Adjunta, where the Mahratta cavalry could operate only with difficulty and the presence of the escort would serve to secure this important avenue.

Meanwhile the main body of the Mahratta cavalry had marched westwards along the Tapti, but instead of attempting pursuit Wellesley, with the object of drawing the Mahrattas to their relief, ordered Stevenson first to levy a contribution on Barhanpur and then to join him and lay siege to the fortress of Assirgarh.

This plan was in part successful, for news soon came in that Scindia and Bhonsla, leaving their infantry on the Nerbudda, had marched southwards from the Tapti apparently with the intention of invading the dominions of the Peishwa as a counter move calculated to divert the whole or part of Wellesley's army from the siege of Assirgarh. The calculations of the Mahrattas were justified, for Wellesley on seeing that his communications with Stuart were menaced, at once left Stevenson to prosecute the siege, and on 11th October marched to Binkenhaly, some ten miles south of the Adjunta, where he remained until the 15th awaiting definite information.

News now came to hand from which it was to be inferred that the enemy had doubled back and was marching to attack Stevenson; whereupon Wellesley returned to the Adjunta on 18th and crossed the pass on the following day. Scindia thereupon halted at Ahuna, on the Tapti, and about three marches from Barhanpur.

Stevenson had meanwhile occupied Barhanpur on 15th October and two days later invested Assirgarh, which surrendered on 21st, the garrison accepting a bribe of Rs. 20,000 offered by Stevenson, in addition to their freedom and the security of their private property.

News of this success only reached Wellesley on 24th and at the same time he learnt that Bhonsla had not accompanied Scindia in this march to the relief of Assirgarh, but was still advancing southwards towards the British communications.

Whilst Wellesley moved in pursuit of Bhonsla, Stevenson was ordered to watch Scindia, who was no longer considered to be formidable, and to make preparations for using the stores captured at Assirgarh for the siege of Gawalgarh in Berar.

Recrossing the Adjunta on 25th October, Wellesley passed Aurangabad on 29th, where he came on to the track of Bhonsla, who was engaged in ravaging the area between this city and the Godavery.

Wellesley at once proceeded to press the Mahrattas so hard that they were obliged to change their camp no fewer than five times in three days to avoid fighting an action.

Meanwhile supplies had again run low, and as another large and important convoy was expected, Wellesley was for the second time placed in the dilemma of being obliged to choose whether he would follow the Mahrattas or move in such direction as to protect his convoy.

In favour of the second course it might be argued that the advantage of mobility lay to so great an extent with Bhonsla, that having exhausted Wellesley's troops in vain pursuit he could at his leisure leave them and march to attack the convoy. On the other hand it might be urged that as soon as Wellesley's intention of moving to the convoy became evident Bhonsla had it in his power to anticipate the British and destroy the convoy. Unless Bhonsla then could be forced to retire by means of a threat to his communications, the alternative of close pursuit would have been preferable, for the enemy if much harassed might well be more concerned to secure his own safety rather than to destroy the convoy, and the possibility of bringing him to battle was always present.

Actually Wellesley attempted so to manœuvre as both to protect the convoy and to menace the Mahrattas, Bhonsla was consequently able on 31st to detach 5,000 horse, who attacked the convoy but were fortunately beaten off, and the supplies came safely to hand on 1st November. That Wellesley should have found himself unable to satisfy two conflicting requirements was inevitable, but in his report on the incident he excuses himself on the ground that he was justified in arranging to guard the convoy rather than to destroy the enemy because on the safe arrival of the supplies and ordnance stores depended his power to remain in the field.

After his failure to capture the convoy, Bhonsla withdrew to Berar. Wellesley made no attempt to follow, for his troops were sadly in want of a rest. They had actually been on the move for a whole month and in weather which was continually becoming hotter, whilst during the last eight days in October they had marched 120 miles, besides crossing two passes over which the guns were for the most part man-handled.

Wellesley therefore decided to halt for a time.

Having rested his troops and assured himself that Bhonsla had retired to Berar, Wellesley moved in leisurely fashion northwards, with the object of reaching a position from which he could both cover Stevenson's operations against Gawalgarh and also if necessary attack Bhonsla.

Leaving Patri on the 10th November Wellesley reached Wakud on 20th and Rajura on 23rd. Here an armistice was concluded with Scindia on terms most favourable to the British, for the Raja agreed not to move his troops within 50 miles of Ellichpur whilst Wellesley was left free to continue his advance and on 27th reached Akola in Berar.

Stevenson meanwhile had, about the middle of November, completed his preparations for the siege of Gawalgarh, and marching up the valley of the Purna reached Ballapur in Berar on 23rd, where he was joined on 24th by a portion of the convoy which Wellesley had saved from Bhonsla.

It soon became evident that Scindia had no intention of observing the terms of the armistice, for he too proceeded eastwards with his cavalry in advance of Stevenson, with the apparent object of



joining a force commanded by a brother of Bhonsla and including the bulk of the Raja's regular infantry, together with a considerable body of horse.

Thus at the end of November there were four armies in Berar and those of the Mahrattas stood between Stevenson and his objective. Wellesley now decided to concentrate his forces for a decisive battle, ordering Stevenson to rendezvous at a place called Parterly, some 50 miles from Ballapur and reported to be the locality where the enemy were lying.

This arrangement was not without obvious disadvantages, for the Mahrattas were deliberately afforded an opportunity of defeating the British in detail. On the other hand a converging movement offered most promise of bringing the enemy to action, and Wellesley's previous experience had not been such as to inspire him with great respect for the martial qualities of the Mahrattas.

Any operation of war must in fact, as has been pointed out, be judged quite as much in relation to the local circumstances in which it was carried out as in regard to its theoretical soundness in the abstract, and movements which are justifiable against opponents of moderate calibre cannot without undue danger be attempted against those who are really formidable.

So well was the concentration timed that the two forces met on the 29th November at Parterly.

As Wellesley wrote: "It was an extraordinary and fortunate circumstance that after Colonel Stevenson and I had been separated for two months at a distance of 300 miles, I should join him on the very morning of the engagement, and that he was only obliged to wait for me one day (on 28th at Hutti Andorah). But the operations of this war have afforded numerous instances of improvement in our means of communication, of obtaining intelligence, and above all of movement."

Wellesley now found himself in command of about 18,000 fighting troops, including three British infantry battalions—74th, 78th, and 94th or Scots' Brigade; on the other hand contact with the enemy had been lost, for they had disappeared on the approach of the British.

On ascending a tower to reconnoitre, Wellesley saw about six miles away to the north, in the plain covered with standing corn, a confused mass of men and animals which he concluded to be their armies in movement.

The situation resembled that before the battle of Assaye, but on this occasion Wellesley's troops had marched 26 miles and those of Stevenson 20 miles, and the day was very hot. Wellesley therefore decided not to pursue.

Hardly had the order been given than at about 2 P.M. as the troops were settling down into camp, the Mahratta irregular horse attacked some Mysore cavalry who were on outpost duty.

Wellesley at once pushed out infantry piquets to support the cavalry, accompanying them himself, and after advancing three miles

in a north-easterly direction through fields of standing corn, came in sight of a long line of infantry, cavalry, and artillery, drawn up on the far side of an uncultivated strip lying between the villages of Argaum and Sirsoni—(map 4). In other words the Mahratta line of battle lay at an acute angle to the road by which the British must advance from Parterly.

The enemy, whose strength was estimated at 40,000, had it was observed adopted the formation usual at that period, of cavalry on the wings, infantry and guns in the centre; and as the irregular horsemen who had been driven back by Wellesley's piquets cleared the front it was seen that the right wing was composed of Scindia's regular cavalry with a swarm of irregular horse, in the centre stood the Berar infantry, the bulk of the artillery being in the left centre, and on the left was another mass of horsemen.

Behind the centre lay Argaum, a strongly walled village, surrounded by fields and gardens enclosed by cactus hedges, whilst the plain in front of the enemy's line was bisected by a nullah, a feature which would prejudice the freedom of action of his mounted troops, but at the same time was calculated to break up the formations of an attacker.

Whether he liked it or not, the circumstances were such that Wellesley had no alternative but to assume the offensive or to await attack, for any hesitation on his part would inevitably have encouraged the Mahrattas to deliver an attack against the British camp.

It was past 4 P.M., the men had now rested for some hours and had eaten a meal. In any case victory would be more probable when their spirits were raised by the excitement of advancing to attack, than if passively awaiting in their camp the assault of superior numbers exulting in the thought that the British were afraid to advance.

Accordingly Wellesley, keeping his Mysore cavalry and the piquets facing the enemy, called up the remainder of his force.

Owing no doubt to the nullahs with which the plain of India is broken, the troops were obliged to advance, not at deploying interval, but in one long column, a formation from which deployment must be slow and therefore hazardous when in the presence of the enemy. In front were the regular cavalry, then Wellesley's own force, next the troops of Stevenson, the left and rear being covered by the irregular Hyderabad or Mogul horsemen, for the enemy's light horse were active and ready to harass the British.

The main body of the Mahrattas however attempted no offensive movements, possibly because the units were not possessed of sufficient manœuvring power to render such tactics practicable.

Wellesley had given orders that, leaving Sirsoni on their right, the British were to form line of battle facing that of the Mahrattas with Sirsoni behind the centre, the first line being composed of the whole of the infantry, the second of the cavalry, the irregulars remaining on the left covering the communications with the camp.

Since the direction of its advance should have brought Wellesley's force almost into the position which at Assaye he had manœuvred to gain, that is in prolongation of the enemy's line, but in this case also covering his own camp, his deliberate abrogation of this advantage can probably be ascribed to the desire to tempt the enemy to stand and give battle, for manœuvre in the corn fields should have presented no insuperable difficulties.

The fact that the whole of the infantry were deployed lends colour to this supposition, for these dispositions, though doubtless made with the object of presenting a frontage as nearly as possible equal to that of the Mahrattas, argued complete confidence in the ability of the British to gain victory.

The locality selected for the deployment of Wellesley's troops was as it proved not only within artillery range of the enemy's guns but the distance was accurately known to his gunners, who had evidently marked the village of Sirsoni. As a result no sooner did the head of the column, a Native battalion with some guns, appear in front of the village than the Mahrattas opened so rapid and effective a fire with their guns as soon threw into confusion the drivers and cattle of the guns as well as the three leading battalions of Native infantry who had rendered good service at Assaye.

The Mahrattas failed to seize the opportunity provided by their gunners, and under cover of his artillery, which came into action on each side of the village, Wellesley was able to rally the wavering regiments behind the village and to lead them, behind the 74th and 78th, who had meanwhile deployed, to their place on the right of the line.

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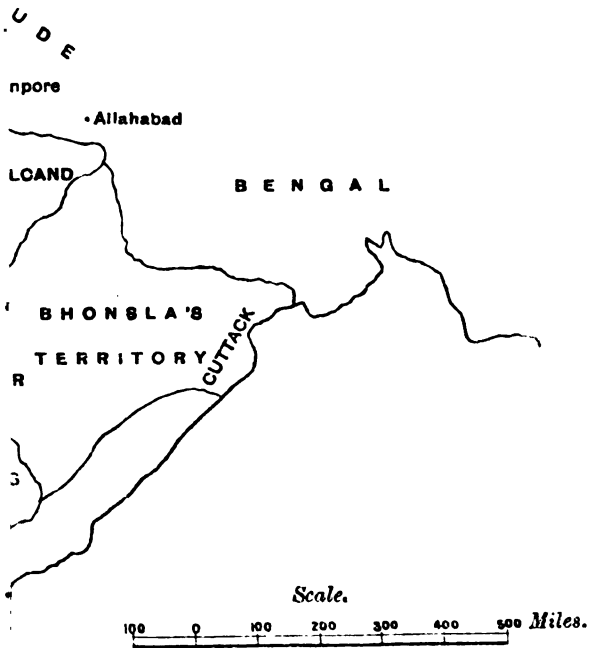
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Map 1.

F INDIA IN 1803.



son College, Buxar, No. 8534, 1900.

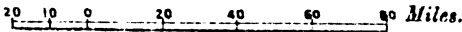






# ILLUSTRATING WELLESLEY'S CAMPAIGN.

Scale.



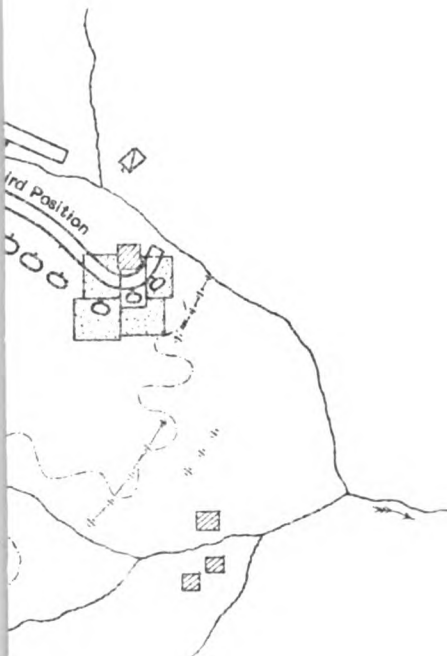
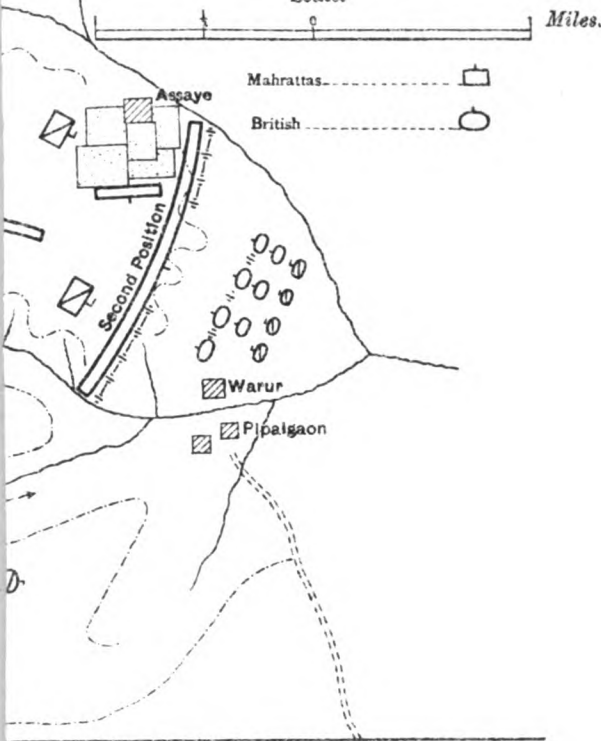




# BATTLE OF ASSAYE.

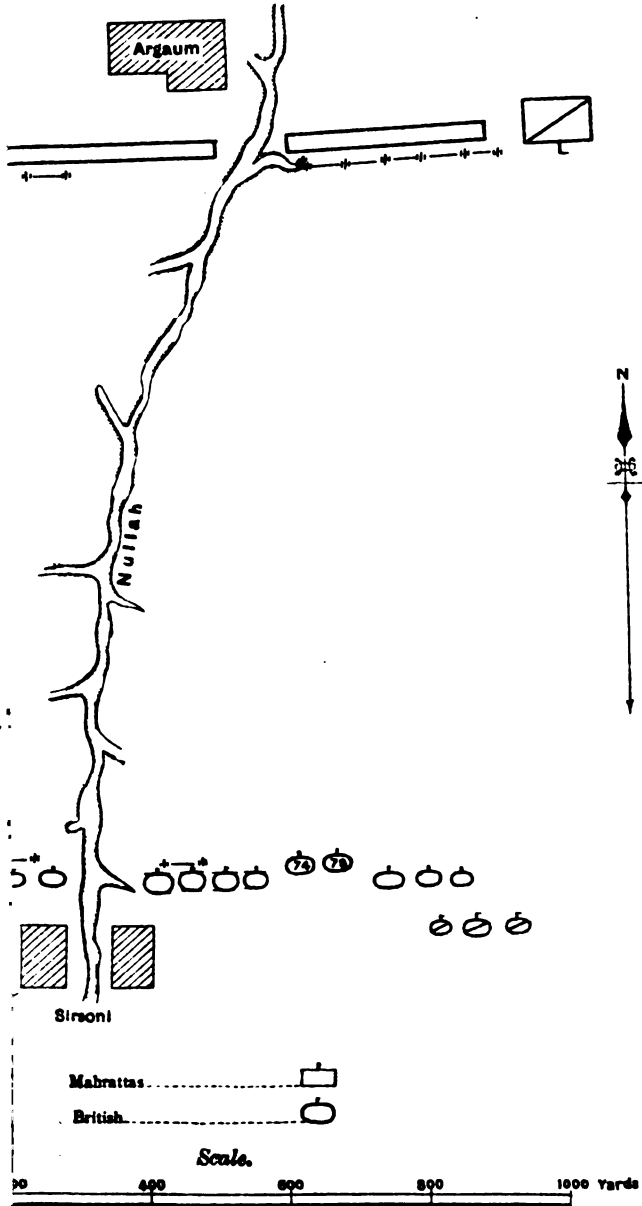
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# BATTLE OF ARGaum.





## SOUTHERN ARMY PRIZE ESSAY, 1911.

BY CAPTAIN C. J. DEVERELL.

**SUBJECT:—"Co-operation in attack and defence between Infantry and other Arms. How is it best attained?"**

### SYNOPSIS.

Preface.

1. Moral Considerations.
2. Infantry and Artillery.
3. Infantry and Cavalry.
4. Methods of Communication.
5. Conclusion.

What is co-operation, and what are its results? This can be answered by a quotation from the "Life of Stonewall Jackson," where the writer draws a contrast between two battles which play important parts in the campaigns selected for study by officers of the Southern Army during the past and present years. Colonel Henderson writes:—"At Worth every battalion within sound of the cannon participated in the forward movement, and numerous batteries, crossing the stream, supported the infantry at the closest range. No general hesitated to act on his own responsibility. Everywhere there was co-operation, between infantry and artillery, between division and division, between army corps and army corps; and such co-operation, due to a sound system of training, is the characteristic mark of a well trained army and a wise leader. At Sharpsburg,.....there was no combination whatever, and even the army corps commanders dared not act without specific orders..... The principle of mutual support was utterly ignored.....and from first to last there was not the slightest attempt at co-operation. McClellan had still to grasp the elementary rule that the combination of superior numbers, and of all arms against a single point, is necessary to win battles."

How then can the various arms combine to assist one another? In Volume I of our Field Service Regulations we find that "infantry depends on artillery to enable it to obtain superiority of fire and to close with the enemy. Without mounted troops the other arms are hampered by ignorance of the enemy's movements, cannot move in security, and are unable to reap effectually the fruit of victory."

It is now proposed to discuss separately the action of infantry with each of the other arms as regards attack and defence, and to see how that co-operation which is so much desired can be best brought about. Under the headings of attack and defence we are

really dealing with all the other minor phases of tactics in which the three arms are engaged, for experience in recent wars points to the fact that at one time or another most operations resulted in one side attacking whilst the other remained on the defensive, with or without a counterstroke.

Before entering into the material conditions which are to influence the events on the actual field of battle, it is advisable to consider the various aids, which we will call the moral considerations, that can be adopted before the battlefield or training ground is reached.

## I.

### MOBAL CONSIDERATIONS.

In approaching the subject of co-operation on the battlefield under present-day conditions, the first point that confronts one is the necessity of fostering the spirit of mutual confidence throughout the troops engaged. One of the chief lessons that the campaign which we have just been studying—the Franco-German War, teaches us is that adequate preparation in times of peace is the foundation of success in war. Are we all now doing our best to inculcate that spirit of mutual confidence between infantry, cavalry, and artillery, and even between the separate units composing these three arms? Frankly speaking the answer must be "No," for although much has been done and is being done, yet much still remains to be accomplished. *Esprit de corps* is a fine thing but *esprit d'armée* is finer: unfortunately in inculcating the former we are apt to neglect the latter. In our army we suffer from difficulties that are not to be met with in the larger armies of Europe and Japan; the exigencies of our service compel regiments, batteries, and brigades of artillery to be continually moving, hence brigades and divisions do not form that one solid permanent mass to be found elsewhere. Opportunities for working divisions and even brigades in many parts of our Empire, as a complete unit, are few and far between. The result is that we gradually become imbued, unconsciously perhaps, with the idea that our own particular small unit is the one thing to be considered, we know that the rest exist but we do not trouble ourselves much about them. The writer was recently lecturing to an audience of officers and non-commissioned officers on the battles of the Manchurian War, and after the lecture a sergeant, wearing the Long Service and the Sergeant's Medal, asked him what particular point he had made in his lecture to him. The sergeant at once replied that the spirit of co-operation appeared to exist between all arms in the Japanese Army. The sergeant then went on to say that the British Army in the ranks have not got that feeling. In the Japanese infantry battalions there is a good feeling, but in the British we do not know anything about the good feeling in the rank and file how can any

attained in times of war. However, we must accept the difficulties and busy ourselves with the means of overcoming them.

We have already done much in this direction by the formation of a General Staff. "Experience taught me," says Von Muffling, a veteran of many wars, "that the habit of acting according to the circumstances and not on fixed principles makes characters, otherwise most confident, mistrustful, and that one soldier will not trust another, if he never knows beforehand how the latter will resolve to act in this or that position." Through the medium of the General Staff the education of officers, and the training of all ranks on the same lines, can be made to permeate through the whole Army.

Each of the three arms possesses a power peculiar to itself, yet each is dependent for its full development upon the aid and assistance of the rest. To ensure combined action it is therefore essential that the officers of each arm should understand the duties of the other arms. Owing to our excellent Field Service Regulations no arm should now remain a mystery to the others, but still it is necessary that every officer should study the special training manuals of arms other than his own. Every opportunity too should be taken of witnessing the field manoeuvres of other arms.

These steps by themselves however, are insufficient, for there should be a frequent and constant interchange of officers of all ranks between the different ranks of the service. Indeed it is already intended that this should be carried out, but how often do we get the reply that "I want my own officers to train my own men, I cannot spare them to go away to other arms." This is looking at it from the narrow point of view, or merely that of one's own particular unit. But the truth is, that not only should officers be frequently exchanged, but that the best officers and those with influence over their fellows should be the ones selected for this duty. Junior staff officers on their return to their units from their tour of staff duty can do much to encourage broad minded views, for fortunately the day has passed when staff officers returning to their units were regarded with mistrust.

It would also be an advantage if staff officers returning after a tour of staff service, and who have been ear-marked for further employment on the Staff, could be transferred to a branch of the service other than their own. The service at large should be a gainer and the unit itself, although the little intricacies of routine peculiar to each arm would have to be mastered by the newcomer, would gain by learning first hand what may be expected from another arm.

So only those questions which aim at bringing about greater unity between the three arms have been discussed, there still remains the question how to attain unity between the individual units which compose each arm. At first sight this would appear outside our scope. If there is unity within an arm, there is not much unity outside it. There should be one general standard of efficiency, be greater or less than another, and all should strive for individuality for the common good.



really dealing with all the other minor phases of tactics in which the three arms are engaged, for experience in recent wars points to the fact that at one time or another most operations resulted in one side attacking whilst the other remained on the defensive, with or without a counterstroke.

Before entering into the material conditions which are to influence the events on the actual field of battle, it is advisable to consider the various aids, which we will call the moral considerations, that can be adopted before the battlefield or training ground is reached.

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There is no desire to enter here upon controversial subjects, but the question is put forward for consideration whether any reasonable prospect of levelling up the whole would be achieved by following the example of foreign armies, by introducing, in the higher ranks at least, one general list for promotion for each arm. This system already works admirably in the Royal Regiment of Artillery and in the Royal Engineers.

The suggestions outlined need not involve any serious financial difficulties, always an important consideration. Their general adoption, it is thought, would tend to a larger view of our military responsibilities, a general desire to work for the common good, petty jealousies would disappear, and that spirit of unity which is so essential to true co-operation would become the dominating factor.

## II.

### INFANTRY AND ARTILLERY.

Not many years have passed since the general idea prevalent in our Army was that the infantry carried out their work in their own way, getting as much support as the gunners chose to give them. It is now thoroughly understood, at least in theory, that both arms are interdependent, that it is just as much the duty of the infantry to assist the artillery, as it is the duty of the artillery to support the advance of the infantry by its fire.

In practice this interdependence is sometimes conspicuous by its absence, but when this is the case, it is generally due more to lack of experience and to habit or haste, than to anything else.

The first steps to co-operation are based on the operation orders issued after the preliminary reconnaissance in which the commander of both arms should take part. The artillery and infantry commanders should then confer personally, if possible, or failing that, the artillery commander should send his staff officer to the infantry commander with whom he is going to act. The gunner is then informed as to the line of advance, and the general method of attack, and given a certain definite mission, and he can then indicate how he proposes to give the necessary support, whether he considers he can advance his guns or a portion of them in close contact with the infantry and where his own observation position will be. The duty of arranging for the distribution of fire on the various objectives should rest with the gunners.

The infantry and artillery commanders can now issue their instructions, and the next point will be the difficult one of maintaining communication between the now separated arms.

The infantry must have adequate support right up to the moment of assault, when the gunners should lengthen their fuze and range, thus giving not only great moral support to their infantry but also inflicting loss on the enemy's supports and reserves, or upon any part of the enemy's line making a movement to the rear. The longer the fire can be kept up the greater is the prospect of

victory. The experiences of Manchuria and South Africa point to the fact that it is preferable for the artillery to continue their fire until the infantry are almost in the enemy's position, even at the risk of losses, than that the infantry should have to cross the final 150 yards without the help of artillery fire.

Most artillery officers agree that within certain limits, the actual range does not greatly affect the accuracy or effect of modern guns, and that indeed artillery can fire better when removed from proximity to the infantry firing line with all its attendant circumstances. Apart from this it certainly will often be impossible for artillery to advance to the closer ranges, and also the fact must not be forgotten that as at ranges of less than 1,500 yards it is not safe to fire over the heads of infantry, losses from friendly artillery in the earlier stages of the attack may have a serious moral effect.

Extended lines of infantry are, however, difficult to see from a distance, and it does not at all follow that, because the artillery can see their target, they can also see their own infantry. From a range of 3,000 yards it is almost impossible to judge whether the infantry are 500 yards or only 200 yards from the target.

The arrangement of a well considered means of communication between the two arms is therefore essential.

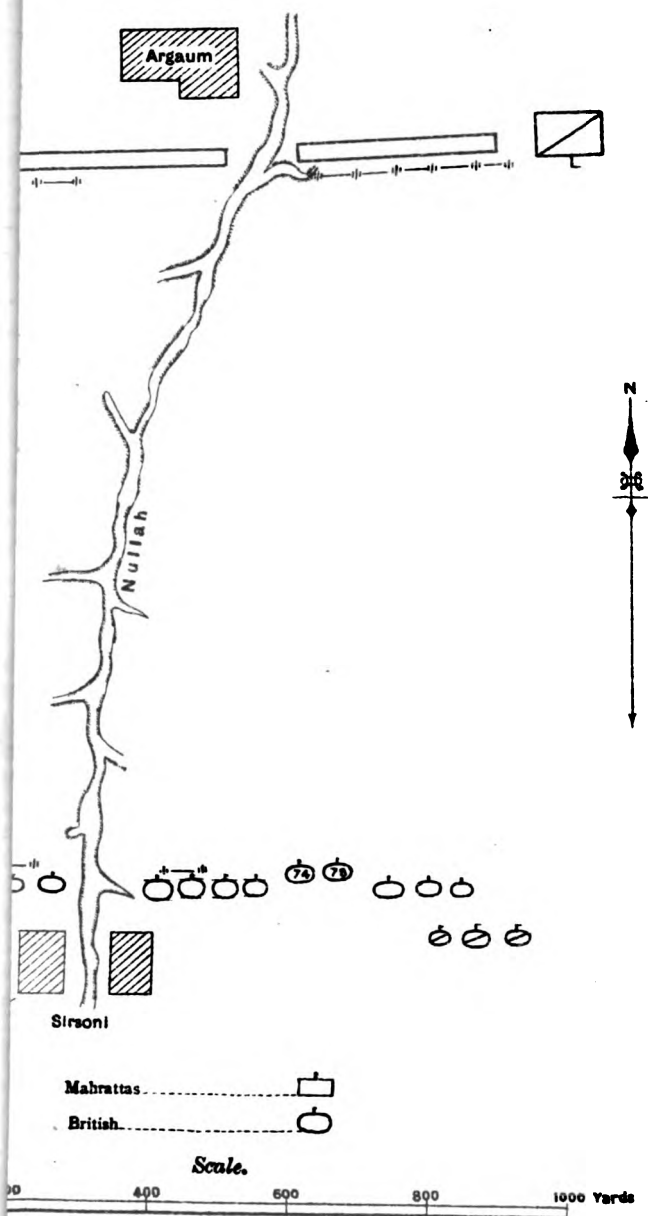
The actual mechanical means of passing messages will be dealt with later; it is only intended here to sketch out a method calculated to attain our object—close support. Let us take as an example an artillery brigade acting with a brigade of infantry in an attack on an enemy in position. The commanders having personally conferred together will repair to their respective positions. The infantry brigadier will post himself where he can best feel the pulse of his troops, and where he can supervise the employment of his reserve. This often will entail the brigadier being a considerable distance in rear of his firing line, for his is the duty of launching his troops to the attack, and a position once taken up and the various means of communication established, movement can be made only at the risk of dislocating control of the whole attack. The position of the artillery commander will be where he can best control and observe the fire of his batteries.

The brigadier will now through his brigade section of the divisional communication company keep in touch with his battalions of the first and second line, the battalions keeping touch within themselves through their own telephonists and signallers. The artillery commander will establish telephone and signal communication with the brigadier. It is important that the men engaged on this duty should be gunners accustomed to work together.

The time, however, may come when the infantry brigadier from his position is no longer able to give to his artillery commander the accurate information which is required. A change of position may be inconvenient for the reasons already given, nevertheless it is essential that a further means of ensuring co-operation must



# BATTLE OF ARGaum.





## SOUTHERN ARMY PRIZE ESSAY, 1911.

BY CAPTAIN C. J. DEVERELL.

**SUBJECT:—“Co-operation in attack and defence between Infantry and other Arms. How is it best attained?”**

### SYNOPSIS.

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1. Moral Considerations.
2. Infantry and Artillery.
3. Infantry and Cavalry.
4. Methods of Communication.
5. Conclusion.

What is co-operation, and what are its results? This can be answered by a quotation from the “Life of Stonewall Jackson,” where the writer draws a contrast between two battles which play important parts in the campaigns selected for study by officers of the Southern Army during the past and present years. Colonel Henderson writes:—“At Worth every battalion within sound of the cannon participated in the forward movement, and numerous batteries, crossing the stream, supported the infantry at the closest range. No general hesitated to act on his own responsibility. Everywhere there was co-operation, between infantry and artillery, between division and division, between army corps and army corps; and such co-operation, due to a sound system of training, is the characteristic mark of a well trained army and a wise leader. At Sharpsburg,.....there was no combination whatever, and even the army corps commanders dared not act without specific orders..... The principle of mutual support was utterly ignored.....and from first to last there was not the slightest attempt at co-operation. McClellan had still to grasp the elementary rule that the combination of superior numbers, and of all arms against a single point, is necessary to win battles.”

How then can the various arms combine to assist one another? In Volume I of our Field Service Regulations we find that “infantry depends on artillery to enable it to obtain superiority of fire and to close with the enemy. Without mounted troops the other arms are hampered by ignorance of the enemy’s movements, cannot move in security, and are unable to reap effectually the fruit of victory.”

It is now proposed to discuss separately the action of infantry with each of the other arms as regards attack and defence, and to see how that co-operation which is so much desired can be best brought about. Under the headings of attack and defence we are





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be arranged, and the information required must come from a position near the first line of the attacking troops.

An officer must be found for this duty, and as an artillery brigade has not an officer that it can spare without consequent loss of efficiency within the brigade, an infantry officer must be selected, one who has been trained with artillery and is in complete sympathy with that arm. The signal party and the equipment might be supplied from the regimental equipment of the battalion in general reserve.

This officer should work preferably on the flank of the advanced line, convenient folds in the ground being utilised for this purpose. His duty will be to keep the artillery commander fully informed of the movements and position of the attacking infantry, of any general advance about to be made, and as a secondary consideration, he may give information as to the effect of the artillery fire.

The first task of the artillery will be to cover the deployment of the infantry, and to do this the enemy's guns must be located. These guns will generally be concealed. Experiences in Manchuria—such as occurred at Tashichiao, Shoushanpu, and Mukden, show how difficult it is for infantry to advance in the face of guns which, through skilful use of ground, have not been located. When the enemy's guns, or a part of them, have been discovered, then the artillery by bursts of fire on an accurately located target endeavours to drive the enemy temporarily from his guns, or to silence them altogether.

The next phase is the fire fight, and the advance of the infantry to the position from which they will assault. Here infantry advance by rushes, moving with rapidity over fire-swept spaces, supported by rifle and machine gun fire. How is artillery to assist? We see it stated that artillery must know when the infantry is going to advance, but is this possible in the earlier stages of the attack when the infantry advance by individual rushes? At this stage the subordinate infantry commanders alone can judge the best opportunities for their advances. Artillery, by means of the communications arranged, can make themselves acquainted with the difficulties and requirements of the infantry, and by suitable bursts of fire give them opportunities of gaining ground. When the time for the assault approaches the communicating officer watching the infantry advanced lines can give valuable information as to the state of affairs. The impulse for the actual assault will come from the firing line; it will probably be instantaneous, for no one can say what it is that actually causes the whole of the attacking lines to rise and rush in upon the enemy's position. The opportunity for the artillery will be a fleeting one necessitating a pre-arranged instantaneous signal to the fire commanders from the communicating officer. It is during the final stages of the attack as the enemy's position is approached that the intensity and frequency of the artillery fire is increased.

During the advance the infantry may discover the position of concealed guns, or of guns which have not been located by the

supporting artillery. Such information should be transmitted, for the danger of assuming that friendly artillery in rear are aware of what is going on must be avoided.

Occasions may arise when a part of the artillery at any rate may have to be sent forward close up to the infantry, but it must be remembered that guns when on the move are very vulnerable, and during their advance their fire is lost to the attack.

The French have adopted the system of "infantry batteries." They allot approximately one battery per battalion to go forward with the attack, sections of these batteries, or in extreme cases the whole of the batteries, moving up into the firing line. Other nations still adhere to the system of a main position, and a few guns in close proximity to the attacking lines.

In close, broken, or intricate country advanced guns may be usefully employed, and in such case the use of mountain or pack artillery is, as was shown in Manchuria, of special value. In open country or rolling down-lands, the guns if advanced would probably see less of the enemy than from the main position, even if they could get forward, which is improbable. If the employment of advanced guns is decided upon, then the fire of concealed batteries should cover their advance, and the infantry should be made aware of the movement so that they can increase the intensity of their fire to cover the advance.

From the foregoing remarks it will be seen that it is considered that field artillery will usually not be able to advance with the attacking lines, but opportunities have occurred, and doubtless will occur again, when such movements may be undertaken. Artillery fire has a decided attraction for artillery fire, and it may be that, in the last stages of the attack, the artillery may by its bold and resolute advance induce the enemy's artillery to turn their fire on to them and away from the infantry. The attacking artillery may be annihilated but it will have accomplished the highest ideals of co-operation.

The conditions of war will now often necessitate an advance by night with the object of attacking the enemy at dawn. Climatic and atmospheric conditions will on such occasions accentuate the difficulties of co-operation, and a carefully arranged telephone system will alone prevent the misfortunes such as occurred to the Japanese divisions of the 2nd Army in their incessant attacks on the Shushanpu position. There in the uncertain morning light the batteries could not distinguish friend from foe, and continued their fire on the lines of entrenchments after they had been occupied by their infantry.

Finally in the attack, when the position has been gained, the artillery must be sent rapidly forward to break down any resistance that may be offered from a second position, to support the pursuit, and to resist counter-attack. It is by no means necessary that for these purposes the artillery should occupy the captured position, which will be crowded with confused masses of men, and perhaps subjected to converging fire from the enemy's artillery, but the required results may be effected better from a position on the flanks.



Thus far only the attack has been dealt with, but much that has been said applies equally to the defence. The object of all fire in the attack is to assist the forward movement of our own infantry; in the defence to prevent the forward movement of the enemy's infantry.

The defence may be of three kinds—firstly the strongest form when the defender merely deploys a small portion of his force, keeping the rest in hand to attack when his adversary has shown his hand; secondly the weakest form, the absolutely passive defence; and thirdly a combination of the two. In the first case the artillery will best help the other arms by opening fire from concealed positions and compelling the enemy to deploy at an early stage. The remainder of the battle will then resolve itself into the attack.

The second case would only be adopted when unavoidable circumstances render an immediate counter-attack out of the question. The defenders rely entirely upon fire action to keep their enemy at a distance, and so to repulse the attack without gaining any further advantage for themselves. Should the enemy succeed in closing upon the defenders, the guns hitherto concealed must be run up to positions from which they can see their quickly moving target, and obtain the maximum of fire in the hope of causing their opponents to abandon the attack, or at least to divert the guns from the infantry entrenchments.

For this purpose the infantry should assist the artillery in the preparation of alternative fire positions, and in their construction the necessity for providing cover for the gun detachments during a storm of shell must not be forgotten. These should be in the form of deep narrow trenches close to the parapet, with covered ways for the men bringing up ammunition.

Before concluding this chapter a few words may be said about infantry escorts to artillery. Batteries should never keep an escort when its services are not required, bodies of infantry near at hand can protect the flanks, and now that batteries are armed with rifles the necessity for the escort has diminished.

In attack and defence the principles of co-operation between the artillery and infantry remain the same. Central control over artillery action, and intercommunication and understanding between the two arms are of the first importance to ensure effective combination of fire and timely support.

### III.

#### INFANTRY AND CAVALRY.

"Infantry and artillery," says Colonel Henderson, "unaccompanied by cavalry, if opposed by a force complete in all arms, are practically helpless, always liable to surprise, and whether attacking or defending hampered by ignorance of the enemy's movements and bewildered by uncertainty."

A study of the Franco-German War will clearly show the truth of the above statement, for it was the lack of co-operation between

the cavalry and the rest of the army that led to the disasters of Weissemburg, Vionville, Amanvillers and Beaumont.

Again Colonel Henderson writes: "But to protect the troops in rear from observation is not the only duty of cavalry. Reconnaissance of the enemy's position is the foremost of its functions, and the occupation of points of tactical vantage, such as hills, woods, villages, etc., behind which the main body can deploy in security, or the out-flanking columns march unobserved, is not far behind. The pursuit, too, falls upon the mounted arm, the destruction of the enemy's trains, the capture of his guns, the spreading of demoralisation far and wide. Most important, perhaps, of all its functions are the manœuvres which so threaten the enemy's line of retreat, that he is compelled to evacuate his position." Here we have summed up the duties of cavalry co-operating with infantry and artillery.

Cavalry, as we know, are divided into three bodies—independent, protective, and divisional. The duties of the independent or strategical cavalry are far in advance of the army, and do not directly concern questions of attack and defence. It may be necessary, however, to detach infantry and field artillery in support of this body and when such steps are taken the detachment should be placed unreservedly under the direct orders of the cavalry commander.

But strategical reconnaissance alone cannot suffice to ensure protection to an army, so this duty is entrusted to the protective cavalry, a force that will furnish the first line of security for the army with which it is operating, and protect it against hostile enterprises. This duty when carried out efficiently secures tactical liberty for the other arms. When the enemy are at a distance this tactical liberty is best secured by action which is mainly defensive, but as the armies approach one another the protective cavalry assist the other arms by carrying out the tactical reconnaissance of the enemy.

The divisional cavalry assist the infantry in the immediate protection of the divisions, and when that force is on the move their mobility enables them to examine a wide extent of ground, and saves the infantry from what would be to them a fatiguing duty.

When the force is at rest due economy must be observed in the employment of cavalry in spite of the temptation to the contrary for nothing knocks up horses so much as outpost duty, especially at night. By day the main duty must fall on the infantry with a few cavalry pushed ahead, and by night, except for a few patrols, cavalry should not be used.

A study of modern battles shows that demoralisation and surprise are still possible. An occasion such as confronted the Prussian III Corps commander at the battle of Vionville when he launched Von Bredow's cavalry brigade to stay the counter-attack of the French VI Corps may occur again.

Infantry, however, is the arm that must win the battle; the cavalry are but accessories, they only assist, and their action by itself cannot carry the enemy's position. They should therefore be kept at the point where the decisive issue is to be settled, and

should not be sent away on minor tasks. One or two squadrons may be sent away to assist in checking flank movements, but large detachments should not be made. The importance of keeping the maximum strength in hand, both of cavalry and infantry, for use at the decisive point, must always be the first consideration.

Keeping in mind the above precept, subordinate commanders should not hesitate to detach troops to the assistance of other arms when occasion requires it. In the report on the army manoeuvres in Wiltshire last year we find instances commended where commanders both of infantry and cavalry rendered timely assistance to one another, but in each instance the detachment made was a small one.

The opportunities presented to the cavalry will often necessitate an immediate decision by the commander on the spot whether to attack on the spur of the moment or to wait until measures of co-operation with the other arms, which require time to perfect, have been arranged.

In the attack just before the final assault by the infantry supported by artillery, the cavalry should, in the event of a successful assault, be sent in pursuit with horse artillery and machine guns, whilst the remainder of the force is being reorganized prior to taking part in the pursuit. Touch must not be lost and the enemy given no respite. If the assault fails, or if action on the defence and a retreat become inevitable, then it is the duty of the mounted troops to check the enemy's advance, whilst the remainder of the force, with the possible exception of a rear-guard in support of the mounted troops, will move as rapidly as possible to the rallying position and there reorganize.

#### IV.

##### METHODS OF COMMUNICATION.

It is evident that in order to ensure co-operation some technical means of communication must be employed, and it will therefore not be out of place to discuss briefly the various means now available.

Signalling has its limitations, for any system depending on the limited capacity of the human eye must necessarily break down when climatic conditions or the works of man or nature oppose an obstacle to vision. But where the wire cannot be laid or is broken, or the Marconi apparatus cannot go, there visual signalling comes in. No wires are required, nor apparatus of any great weight requiring vulnerable means of transport. Cover from the enemy's view and bullets can often be obtained, and the instruments can be quickly set up. The capture of the hill of Monte Cristo in Natal affords a good example of co-operation between infantry and artillery rendered possible by means of the heliograph. In this case a 5" battery posted to the west of the mountain and over 8,000 yards from its summit was able to keep in immediate touch with the assaulting infantry up to the moment of the assault. During the attacks on the Port Arthur forts the assaulting parties carried a large white flag with which they signalled back to the batteries. They also used to mark the

positions of their most advanced parallels by white lights, and signal to the supporting artillery by means of red Bengal fire.

We next come to the portable system of wireless telegraphy and wireless telephony. The nature of the equipment which requires the aerials to be suspended from long poles or masts, or from balloons as was done by the Germans in S. W. Africa, precludes its employment at present in the very front line of battle. But dependent as it is on neither visual communication, nor upon a wire, it is adapted, as is no other means, for keeping communication between separated bodies of troops, in spite of impracticable country, or, except in the case of thunderstorms, of the inclemency of the weather.

Scientists claim that the introduction of wireless will eventually produce wireless destroyers in the form of strong currents discharged into the air, but at present wireless messages are free from interruption from the enemy. The disadvantage lies in the failure to acquire secrecy, for any message sent from a wireless station can be read by any other similar station within a circle whose radius is equal to the length of the waves. But although messages can be tapped or read within this area, they cannot be prevented from reaching their destination, and so, tactically at least, the advantage will rest with the final receiver who has the key to the cipher, if a cipher be used. The disadvantage of the wireless message being tapped *en route* applies with greater force to the wire, for whereas to tap the former will require a trained detachment with a complete wireless apparatus, the wire can be tapped by a single skilled individual, or cut and altogether intercepted by anyone. Thus as far as our subject is concerned the wireless system should facilitate co-operation between the strategical cavalry and their supporting infantry, or between the protective cavalry and the other arms. On the actual field of battle the employment of this form of communication is not at present likely to be of importance.

For this a system of portable telephones is most suitable, and their use between infantry and artillery has already been discussed. Owing to the rapidity with which cavalry move, systems such as visual signalling or wireless telephony are more suitable than those which entail the use of wire.

For communication between the different parts of the infantry attack the telephone is not altogether satisfactory owing to difficulty in its use with a rapidly advancing line, and also to the noise in the firing line. Megaphones, discs, and semaphore signalling have all been tried, but no universal method can be laid down; the actual circumstances can alone decide this question.

Divisional signalling companies have now been formed in India, and were last year experimentally organized in England. A company is divided into one divisional and three brigade sections. All signal units work downwards; a divisional section finds the lines to brigades, and a brigade section those to battalions. In all cases equipment and personnel will be available to duplicate the above lines by visual signalling, despatch riders being attached to the company to assist

in lateral communication. These companies have proved themselves of such value and importance in their experimental stages that there can be no doubt that their formation into permanent units, which can attain a really high standard of efficiency in everything connected with intercommunication, will greatly assist co-operation.

## V.

## CONCLUSION.

Before concluding a few words may be said about the co-operation of infantry and engineers. The duties of the latter are principally technical, but on the battlefield they should be ready to secure captured localities to form *points d'appui* or to serve as rallying posts. Instances, are not wanting where engineers acting on the initiative of their commander have been able by fire action to help their infantry comrades, by protecting an exposed flank or by covering fire.

The remaining arms mentioned in our Field Service Regulations—mounted infantry and cyclists—dependent as they are on fire action and being but a more mobile form of infantry, can be included in what has been already said of that arm. Their mobility as infantry renders them of special value as a supporting force to the independent cavalry, and gives to that body the strategical liberty which must not be hampered by its connection with infantry and field artillery, arms which may be sent to support cavalry, but which must not restrict them in their rôle of strategical independence.

Co-operation means unity of action, and in the words of an article published in the *Russki Invalid*, a translation of which appears in the first number of the *Army Review*, "Unity of action will be assured:—

- (1) If officers commanding reflect and refract, as it were, the light contained in an order, elucidating all the various steps and stages in the execution of work therein assigned to them; and if they act in accordance with a common theory of war.
- (2) If subordinate leaders are imbued with the spirit of initiative.
- (3) If each commander trusts his neighbours, subordinates and superiors.
- (4) Finally, 'last and least,' if use is made of technical means of communication.

If the three first conditions exist, unity of action will be possible, though difficult, it is true, even with indifferent intercommunication. On the other hand if the three first conditions are absent, no amount of technical means of intercommunication will produce unity of action."

To attain the four objects quoted above a thorough knowledge of the regulations and methods, not only of one's own arm, but of all the other arms, is absolutely essential, and such knowledge can only be acquired by study and experience.

# UCHTERLONY'S CAMPAIGN IN THE SIMLA HILLS, 1814-15.

BY COLONEL W. G. HAMILTON, D.S.O.

## *Prefatory Note.*

[The following account is based upon the original correspondence, minutes, and despatches contained in a volume, a copy of which is in the central library, Army Head-quarters, entitled "Papers respecting the Nepal War printed in conformity to the resolution of the Court of Proprietors of the East India Stock, of the 3rd March 1824." The resolution runs as follows :—"At a general court of the United Company of Merchants of England trading to the East Indies held at their House in Leadenhall Street on Wednesday, the 3rd March 1824, it was moved, and on the Question, Resolved that there be laid before this Court all correspondence and other Documents to be found on the public Records of this House which regard the Administration of the Marquis of Hastings, which may enable the Court to judge of the propriety of entertaining the Question of further remuneration to the late Governor-General."

Francis Rawdon, successively Baron Rawdon, Earl of Moira, and Marquis of Hastings, after a varied career in the Army in which he rose to be Commander-in-Chief in Scotland and Master of Ordnance, later a courtier and active in support of the Prince of Wales, became Governor-General of Bengal in 1813, and held that appointment until his resignation in 1822 on account of a difference with the Court of Directors regarding certain financial transactions with Hyderabad State. He had been granted £60,000 by the East India Company on account of his services, but falling into poverty applied again for assistance, and to this circumstance we owe the valuable compilation now made use of.

The papers in question are thrown together without any particular regard to subject or sequence, they deal with matters great and small, and are not in themselves a connected account of the war, though they form a valuable mine of information on the subject, a mine which by the marginal marks in the volume has been worked before, though I know of no detailed account of the operations now described, for the proper understanding of which moreover some knowledge of the ground is necessary.]

The war against Nepal which commenced in November 1814 and lasted till March 1816 was divided into

### **The Nepal War. First phase.**

two distinct phases. The first consisted of a series of five operations, directed against

various objectives on a front of over 600 miles, from the Sutlej on the west to the eastern portion of Nepal. These operations were intended to be mutually supporting, and the plan of campaign was defended by its author, the Earl of Moira, Governor-General and Commander-in-Chief, and accepted as correct after the event by the East India Company, on the grounds of political necessities, of under-estimation of the fighting qualities of the Gurkhas and of the impossibility of foreseeing incompetence on the part of some commanders. Such dissemination of force produced however its usual result.

Failure and indeed some measure of disgrace attended the operations of three of the columns, while the situation was only saved, and a satisfactory result attained by the success of the campaigns of Gardner and Nicolls in Kumaon, and of Ochterlony in the Simla Hills. With the former of these I have dealt previously in this Journal (July, 1903) to which paper I would also refer for more

details regarding the Gurkha forces, and the general course of the war than need be repeated here. The operations of Ochterlony are equally worthy of study, and possess an additional interest from the fact that the scene thereof is easily accessible from Simla and the neighbouring hill stations.

As however what I wrote some years ago can hardly expect permanent remembrance, a brief resumé of the general course of the Nepal War will not be out of place here.

Encroachments by the Gurkhas on British territory compelled a declaration of war against Nepal in the autumn of 1814. The army destined for the purpose was organized and disposed as follows\* :—

*1st Division* at Dinapore.—Strength varying from 6,000 to 13,000 men. Objective Katmandu.

*2nd Division* at Benares.—Strength about 3,000, to co-operate with 1st Division against Katmandu.

*3rd Division* at Meerut.—Strength 3,000 to 3,500. First objective Dehra Dun, afterwards to operate eastward against Garhwal or westward against Nahan, or on the flank of the Gurkhas should they retire before the advance of the 4th Division, and in general to co-operate with that Division.

*4th Division* at Ludhiana.—Strength from 6,000 to 7,000. Objective the Gurkha forces who held the Simla Hill States.

The intention was to advance with the several columns more or less simultaneously and engage the enemy in November. The operations of the 1st and 2nd Divisions were conducted with lamentable incompetence, and were entirely futile.

The 3rd Division commanded by Major-General Gillespie met with unexpected opposition at the little fort of Kalunga near Dehra Dun, two assaults on the 31st October and 27th November failed with heavy loss, Gillespie himself being killed in the first, and the post was only occupied at the end of November after evacuation by its heroic defenders.

The extensive programme drawn out for this division was impossible of fulfilment and the force only moved on Nahan, where it besieged for over four months but did not dislodge a Gurkha force of 1,500 men occupying the fort of Jaitak on the hills above that town. The post did not surrender till May, and then only under the terms of the general capitulation consequent on the successes of the 4th Division.

The 4th Division commanded by Ochterlony carried out its programme with entire success in the face of physical difficulties, and of stout opposition by Amar Singh Thapa who, finally defeated

\* In earlier orders and despatches, the 1st and 2nd Division, are considered as one force, the Meerut Division is termed the 2nd and Ochterlony's the 3rd Division. As however Lord Moira's final despatch, dated 2nd August 1815, designates the several Divisions as given here, and as in fact there was no co-operation between the 1st and 2nd, the later nomenclature more correctly expresses the actual organization of the Army.

in a pitched battle at Malaun on the 15th-16th of April, surrendered his last post on the 15th May.

In the meantime a brilliant and successful little campaign had been conducted in Kumaon by irregular troops under Colonel Gardner during February and March. Gardner's force, reinforced by regulars under Colonel Nicolls, captured Almora after a sharp action in front of that town on the 26th April 1815 and compelled the Gurkhas to withdraw entirely from the provinces of Kumaon and Garhwal. So ended the first phase of the war.

Nevertheless, as the Gurkha government showed a stubborn indisposition to conclude final negotiations on a satisfactory basis, it became necessary

**Second phase.**

to undertake a fresh campaign next cold weather. A strong and well-equipped force of 20,000 men under Ochterlony, styled the Dinapore Division of the Field Army, was therefore assembled on the Nepal border early in February 1816, supported by 15,000 men to create diversions to the east and west. Advancing on Katmandu, Ochterlony inflicted a crushing defeat upon the main Gurkha army at Makwanpur within 20 miles of the capital on the 28th February, and so the war ended with a final and satisfactory peace.

It is, it may be remarked, as unfair as it is unhistorical to brand the whole of the first phase of the war as unsuccessful, and to reserve the epithet of successful, as I have seen in more than one official document, for the final phase only. A war which relieved, even if it did not finally remove, a most grave and menacing political situation, affecting the whole of the northern border of the Company's dominions, which resulted in the cession of the whole of the hill country from the Sutlej to the Kali river on the western border of Nepal proper, can hardly be regarded as in the main unsuccessful. It is true that a final campaign was necessary in the following year a campaign which based on sound strategical principles and directed with concentrated forces against the heart of the enemy defending their capital, gave the knock-out blow, and brought the final peace. But the earlier campaigns of 1814-15 cleared the air, forged the weapon on the anvil of hard fighting, and above all brought forth the man.

After all, the secret of success may often be found in the man rather than in the plan, and though in the study of military history there is perhaps some tendency to direct attention mainly if not solely to the latter, and to accord praise or blame to the strategical plan or the tactical details according to the success or failure resulting, it will often be found that at the root of the whole matter lies the capacity of the leader, which places the halo of victory or the fool's cap of failure over the commonplace features of a plan we are thereupon invited to worship or decry.

When Colonel David Ochterlony was placed in military command of the north-western column combined with the political superintendence of Gurkha affairs between the Sutlej and the

**Ochterlony. His career and character.**

Jumna he was already a man of some mark. Born in Boston



Massachusetts, in 1758, the son of an officer in the British Army, he entered the service of the East India Company at an early age, and after serving with credit came to prominence when, as Resident at Delhi, he conducted the successful defence of that city against the Mahratta attack in 1804. Subsequently he became Agent to the Governor-General for the Sikh States, which involved the superintendence of the Cis-Sutlej Sikh States who had placed themselves under our suzerainty, and political relations with the independent ruler of the Punjab, Ranjeet Singh. The attitude of that astute monarch, though not unfriendly towards the British, was at this time a political factor of considerable uncertainty. A movement of his whole army southward from Amritsar in December 1814 gave rise to considerable trepidation, but Ranjeet Singh was sufficiently far-seeing to recognise the real strength of British rule, and was not inclined to pull anyone's chestnuts out of the fire for them. Above all, he knew the man he would have to deal with, David Ochterlony.

Ochterlony's fame rests however mainly on his outstanding qualities as a commander and leader of men in the Nepal War, at the commencement of which he, then 56 years of age, held the rank of Colonel, soon to become Major-General, and later a Baronet and K.C.B. In March 1818, he received the insignia of the Grand Cross of the Bath personally at the hands of the Governor-General, whereby, in the words of the Governor-General he "obliterated a distinction painful for the officers of the East India Company."

His character as a man of affairs, clear thinking, strong and straightforward in word and deed, stands out as clearly in his correspondence and despatches as it does in his actions. It is like a blast of fresh air in a stuffy room to read his reports among the mass of official verbiage, long-winded explanations, and discursive orders which form the bulk of the official correspondence on the Nepal War. When for example "the Commander-in-Chief directs me (the A. G.) to take this opportunity of requesting that you (the Secretary to Government in the Secret Department) would further be pleased to suggest to the Right Hon'ble the Governor-General" that patterns of a hamper for carrying baggage may be procured, it would hardly be guessed that the Commander-in-Chief and the Governor-General were one and the same person or that enquiries regarding a necessary article of war equipment were being made in such terms when war was already imminent.

Impressed as all Easterns are by a strong and consistent character the native soldiers loved and indeed worshipped Ochterlony. Men who failed under others faced dangers and privations cheerfully under him, and under him felt assured of the victory which they achieved. The tall pillar which stands on the Maidan at Calcutta bears witness still to the affectionate admiration felt for their old commander by all ranks of the Indian Army.

It must be added however that Ochterlony brought himself into touch with native life in a way which, though not uncommon a hundred years ago, hardly commends itself to the moral sense of

more recent days. In private life he dressed and lived as a native of India, while a harem (the inmates of which were not always affectionately subservient) formed part of his domestic establishment.

It is possible that the atmosphere of intrigue inseparable from such surroundings may towards the end of his life have biassed his judgment in political questions to some degree, and thereby led to his coming into that conflict with Government which caused his retirement and, almost immediately after, his death at Meerut in 1825 from sorrow and disappointment. His policy in the matter of the Bhurtpur succession was, it is true, afterwards accepted by Government, and their negation of it reversed, but one cannot help thinking that the strong partisanship which he displayed and backed up by forcible measures may not have been entirely unaffected by certain influences, or that at least Government suspected such to be the case.

In accordance with the general plan of campaign the force under Ochterlony termed at the time the 3rd or N.-W. Division of the Field Army was assembled at Rupar by the end of October 1814. Its composition was as follows\* :—

**Ochterlony's Division.  
Composition and strength.**

One company European Artillery, and two companies of Gun Lascars attached ...	...	Major McLeod.
2nd Regiment Native Cavalry, and one Rissala of Captain Skinner's Corps ...	...	...
2nd Battalion, 1st N. I. ...	...	} Brigadier Colonel Arnold.
2nd " 6th " ...	...	
1st " 19th " ...	...	
2nd " 19th " (6 companies) ...	...	

*Reserve.*

2nd Battalion, 3rd N. I.  
Light Battalion, formed of Light companies of Division.  
3rd and 4th Companies of Pioneers.

The cavalry do not appear to have been employed in the hills, though we find two irregular "rissalas" under native officers fighting on foot at Malaun, but to have been utilised below Nalagarh only, and in observation of the frontier.

The strength of the force employed was—

Artillery, including Gun Lascars and drivers ...	...	950
Native Infantry ...	...	4,778
Pioneers ...	...	265
Total ...	...	<u>5,993</u>

The artillery armament consisted of—

Two 18-pounders, two 5½-inch mortars, two 5½-inch howitzers, and ten 6-pounder battalion guns drawn from the units of the force and from battalions in the plains. Total 16 pieces of ordnance.

\* Authorities for composition and strength are :—Report by Secretary to Government, dated 9th October 1814; General Orders by C.-in C., dated November 1814; Ochterlony's Despatches and States, and Despatch by Governor-General, dated 2nd August 1815.

It is difficult to bring these into entire agreement, but having regard to all, the figures given may be accepted as practically correct.

During the operations, the 2nd Battalion, 7th N. I., four 4-inch mortars, and two 4½-inch howitzers joined the force, bringing it up to 7,112 men and 22 pieces of ordnance.

In addition, a detachment of Patiala troops served with the force from the commencement, while auxiliaries from other protected Sikh States, the Hindur (Nalagarh) State, and others, served in gradually increasing numbers. The addition of Gurkha prisoners and deserters taken into service brought up the total of these auxiliary troops towards the conclusion of the campaign to 4,463.

Though not of high fighting value, these auxiliaries did useful service on the line of communications, which was almost entirely entrusted to their charge. A certain number of Gurkha enlistments were brought into action in the final battle and did well.

The objective assigned was the main army of the enemy under Amar Singh Thapa—the only Gurkha force

**The objective.**

constantly in the field, the strength of which was estimated, with approximate correctness, at 5,000 to 6,000 men, of whom not more than 2,000 were true Gurkhas. Its position was vaguely stated to be between the Jumna and the Sutlej with headquarters at Erki. But where Erki actually was, was doubtful. It was believed to be either on or near the Sutlej, or to be identical with, or adjacent to, Nalagarh. As a matter of fact, while Amar Singh's headquarters were actually at Erki when the campaign opened, that town is 18 miles S.-E. of Bilaspur, the nearest point on the Sutlej, and 15 miles N.-E. of Nalagarh as the crow flies. The intervening country being a tangle of mountains and ravines, devoid of roads other than tortuous tracks, the actual marching distances are much greater—*vide* map 1 at end of article.

The vagueness of the topographical and other information afforded to, or obtainable by, Ochterlony may be ascribed to the fact that such intelligence

**Information.**

was being collected by the Commander-in-Chief some two months only before war was declared, from the few persons who it was believed might know something or who volunteered their services. Dr. Rutherford who provided the best and most accurate information regarding the Gurkha Army, its leaders, its organization and fighting value, and the topography of Kumaon and Garhwal says little regarding affairs west of the Jumna.

This gentleman being trade agent for the company at Moradabad, as well as Civil Surgeon at that place, besides trading on his own account in hemp, timber, ginger and turmeric, was in intimate connection with individuals of all classes in Kumaon, Garhwal, and even Nepal proper. Utilising these sources of information, and employing Pundits, Gurkhali soldiers and others, as paid spies, his services in the Kumaon campaign were invaluable, but his equal does not appear to have been found elsewhere, while his sound advice and opinions expressed before the war do not appear to have carried the conviction they deserved. The other principal informant of Government, Captain Hyder Hearsey, also knew little except about

Kumaon and Garhwal, while some of his information, especially his entire underestimation of the fighting qualities of the Gurkhas and the capacity of their leaders was absolutely misleading. "As far as the Gogra from the Sutlej," he writes, "the Gurkhas could be expunged in a month." These views from one whose opinion as a former prisoner with the Gurkhas might be expected to be reliable, undoubtedly and unfortunately carried weight with Lord Moira, and influenced his plan of campaign.

It was pointed out by most informants that the normal transport, which consisted of elephants, camels, carts, and pack bullocks was unsuited to a hill campaign, and that man transport, and to a certain extent mules, were necessary. However it is clear that Ochterlony's transport consisted mainly of Brinjara bullocks, of which some 5,000 were employed in the hills, as soon as the road could be made at all practicable, while the ordnance was conveyed on elephants, one elephant per piece. Some hundreds of coolies were also used to carry artillery ammunition and equipment, but the fear of the Gurkhas prevented the hillmen from taking service in sufficient numbers until the ultimate success of the campaign was practically assured. Want of suitable transport greatly delayed and hampered Ochterlony's operations throughout.

It was also pointed out that tents and baggage should be reduced to a minimum and that suitable foot-gear was essential. The former matter settled itself directly the hills were entered. The latter was taken up, late in the day however, and it is doubtful whether some thousands of deer-skin shoes ordered through Dr. Rutherford, and of a pattern suggested by him, were ready till long after the war began. Red tape was as usual an obstructing factor. The Collector of Customs at Bareilly refused to pass the skins consigned by Rutherford to Cawnpore, where they were to be made up, without a regular permit, or payment of double duty. He peremptorily refused to accept Rutherford's explanations and remonstrances, quoting regulations at him in the most approved manner, and the matter was only settled and the skins passed late in October, after an appeal to the Governor-General.

Amar Singh Thapa, the commander of the enemy opposed to Ochterlony, was the chiefest of the Gurkha generals and administrators. He had been fighting almost continuously for some 15 years, and in that time had over-run Garhwal, Jaunsar, the Simla Hill States, and Kangra. The fort of Taragarh near Bakloh marks the limit of his power at one time. In 1809 he had applied to Ochterlony for assistance in reducing Fort Kangra, but common sense, coupled with remonstrances from Ranjeet Singh, caused his request to be refused. Thereafter he had fallen back east of the Sutlej, and in 1814 was in effective occupation of all the Simla Hill States. Taksal Fort, the ruins of which stand close to the Kalka-Simla Railway, above Kalka, was one of his advanced posts, and is

**The enemy and their commander.**

described in a report as covered by a stockade and garrisoned by about 150 men. It is a good example of the lesser forts which stud most of the country occupied by the Gurkhas. The stone forts or towers were used as keeps, and when danger threatened they formed the nuclei of positions covered by stockades of timber and stone, and by *sangars* in the construction of which the Gurkhas were notably proficient.

Amar Singh Thapa was believed to be disaffected to the Nepal Government, and on several occasions attempts were made to seduce him from his allegiance. He rejected all with scorn.

The true Gurkhas were stubborn fighters. Some of the hill-men who served with them emulated their prowess, others were not averse to deserting, or changing sides, when the fortune of war went against them. Their armament was the common flint-lock musket of those days, but they preferred the kukri and close fighting. They ate frugally of rice, marched fast, and marched far, baggage being carried by women and boys, while their only covering at night was a blanket on sticks.

Much assistance had been expected by the Governor-General from the petty chiefs in these hills, who had been ousted by the Gurkhas. Events however proved the contrary. The inhabitants were cowed by the Gurkhas and rendered little or no assistance until Ochterlony's success was assured. However, they profited, and still profit by the mistaken reliance upon their cordial co-operation, since the restoration to the chiefs of their former possessions was guaranteed as the consequence of our success. In spite of the fact that armed men from the majority of the petty States assisted the Gurkhas at the commencement of the campaign, this promise was kept at the close of the war.

By the end of October Ochterlony's force had assembled at Rupar,\* on the east bank of the Sutlej, where the river breaks through the low Siwalik range and opens a clear way through the Dun beyond to the foot hills of the main ranges. Marching thence on the 31st October and halting a day at Plasi to pay troops and get rid of superfluous baggage, the division arrived before Nalagarh, which lies at the foot of the first steep rise, on the 2nd November 1814. The fort, occupied by a Gurkha detachment, was contiguous to the ruins of the town, and commanded by adjacent heights.

It was invested and battered by four pieces of artillery from daybreak on the 4th November, for a couple of hours, when two Brahmins came out of the fort and offered surrender. After some delay in parleying, the garrison, which, including that of a neighbouring tower, numbered 84 fighting men only, marched out and laid down their arms on the 5th November. The casualties in the attacking force were one killed and five wounded. This little initial success called forth a chorus of praise and congratulation. Ochter-

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\* Vide map 1, also Footnote on page 145.

lony published a congratulatory order, the C.-in-C. added his unqualified approbation, while the Governor-General communicated his high gratification, and referred to the importance of the success.

Reasons for this may be found in some feeling of uncertainty as to how the sepoys would care to face the Gurkhas, and to the fact that this success was in some measure an offset to the disastrous failure before Kalunga on the 31st October.

The Gurkha prisoners were offered and accepted service with Ochterlony's force, but in doing so discrimination was made between Gurkhas proper and hillmen in their service. The former were marched to Ludhiana as prisoners under escort of a troop of cavalry, while the latter were enlisted and formed the original nucleus, gradually augmented by subsequent surrenders, of the Gurkha element in the Indian Army.

Before Nalagarh had surrendered the enemy were reported to be

**Advance from Nalagarh.**

advancing in strength from Erki and Sabathu, so troops were sent on at night to cover Nalagarh, and pushing on later along the direct road to Erki occupied the high ground at Goela,\* (spelt Goilah on map 1) facing the pass which cuts through the Ramgarh range below the fort of that name.

The road, running almost due north from Goela, drops about 1,000 feet into the bed of the Chikni Nullah, and thence rises again about the same distance to the crest of the Ramgarh Pass. West of and 800 feet above the pass rises steeply the spur of the main range on which stands the fort of Ramgarh. East of the pass the range mounts again till, within  $1\frac{1}{4}$  miles of the pass, it culminates in a peak 200 feet higher than Ramgarh. Trending in a general direction of N.-W. and S.-E. the range, except for the one break where the road crosses, maintains a general level of 4,000 to 5,000 feet, broken by minor peaks and depressions.

The information regarding the enemy's concentration was

**Situation before Ramgarh, 12th November.**

correct. They were already in strength at and about the pass, and when on the 12th November the British force, delayed by the necessity of making the road fit for the passage of the guns, was concentrated at Goela, it was faced by 3,000 men, the flower of the Gurkha army, strongly established and covered by stockades on the heights of Ramgarh and Badu, and on the spurs trending down therefrom towards the pass and the Chikni stream.

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\* In the spelling of place names I have followed, as the latest and best authority, the Punjab Survey map, scale 2 inches to a mile (sheets 289 N.-E and S.-E), which differs somewhat from that used in the older survey map, scale 4 miles to the inch. The spelling used in contemporary reports is wildly phonetic and not always consistent. In some cases identification would be almost impossible except for the context. This may be ascribed to the place name being misheard in the first instance, possibly passing through several months before being written, while additional error seems to have been introduced in some cases in printing up MS. documents. The following are a few examples out of many:—

Chickeree of reports = Chikni of map.

Rumging, otherwise Burrahgong = Bariyan of map.

Kaudree, otherwise Randnee = Kahanani of map.

Ochterlony grasped the situation. He had already reported, as early as the 4th November, that Amar Singh Thapa showed no intention of retreating, but that, avoiding a general action on the level, he would defend every fort and stockade. Measures to intercept his retreat towards Nepal were recognised as unnecessary. Moreover, Ochterlony recorded his opinion that though Gurkha forts and stockades had been spoken of contemptuously, they were on the contrary extremely formidable and the defenders determined. In place of small detachments the force should, he considered, be concentrated on certain points and no movement should be unaccompanied by a gun or guns. It will be seen that he acted throughout on these opinions, and thereby avoided disasters which befel other divisions of the army.

Ochterlony decided to turn the left of the Gurkha position.

**Situation—how met.**

His reasons for choosing this flank are nowhere recorded, but they are fairly obvious. Strategically, a movement by this flank tended to interpose between Amar Singh and his detachment at Nahan, and to drive him back westward towards the Sutlej, beyond which river he had neither friends nor allies. Tactically, a movement south-east from Goela, towards the head of the Chikni Nullah, and thence over the range, though sufficiently difficult, did not present such physical difficulties as would be entailed by a movement north-westward, in which direction also the range to be crossed was loftier and more massive.

With this object therefore  $2\frac{1}{2}$  battalions were directed on Kahanani, a group of hamlets on the crest of the range, where the ground opening into broad plateau gives sufficient camping space; the ground between that place and the enemy's left,  $1\frac{1}{2}$  miles to the N.-W., was reconnoitred, as also the valley in their rear, by Lieutenant Lawtie, the Field Engineer, whose name constantly recurs in despatches as an indefatigable and successful reconnoitrer. He died, lamented by his commander, from disease ascribed to his exertions, very shortly after the final battle of the campaign. (Kahanani is spelt Kannanni on map I.)

The route to Kahanani was absolutely impassable by cattle, but after some preliminary work guns were got forward on elephants, ammunition and equipment for the same being carried by 700 coolies.

By offers of large rewards the country people were induced to assist in making a road, and by the 20th November supplies were brought up to the army then concentrated at Kahanani, securely covered by strong posts. The heights at Goela were held by Patiala levies, and the route piquetted by irregulars of Hindur. On the 23rd November, the whole force, less one battalion left to hold the high ground near by, broke up from Kahanani and descended to the low and more level ground leading to the rear of the enemy's position. Next day a move was made to Ner, where on a level

plateau above the Kohaj stream one and a half miles north east of, and 500 feet below, the Ramgarh Pass headquarters were established for some time to come (Ner is spelt Nori on Map (1)).

Ochterlony's force was now established directly in the former rear of the Gurkha positions, and on the route thence to Erki. The enemy's line of supply from Erki and the east was thus intercepted entirely. They still obtained assistance however in men and supplies from Bilaspur and neighbourhood.

Though thus turned, the Gurkhas showed no signs of abandoning their positions, but on the contrary showed a strong front, defended by stone breastworks and stockades, on the side now threatened, the advanced defences being pushed well down the slopes.

On the 27th November, fire was opened upon the lower stockades from batteries established during the previous night, but the range was too great and the elevation too high to produce any effect, and an intended attack was therefore deferred. However, to cover a close reconnaissance by Lieutenant Lawtie, a party moved forward to a wall within 300 yards of the stockade. The Gurkhas rushing suddenly out of their position drove the party back with heavy loss before reinforcements could reach them, and a sharp fight ensued before the situation was restored by four battalions brought into action. The advanced wall was not regained however, and the killed and wounded were left on the ground, until the Gurkhas offered to allow them to be removed. The casualties in this engagement amounted to 42 killed and 34 wounded, a sufficient indication of the severity and of the hand-to-hand nature of the fighting.

Ochterlony's intention then was to establish a battery in a more advanced position and renew the assault, an attempt which offered considerable difficulties, and certain loss of men. Neither of these considerations were in themselves sufficient to deter Ochterlony, but after sounding commanding officers (apparently regarding the spirit of their men), and on receipt on the 2nd December of the news of the second repulse of the 3rd Division before Kalunga on the 27th November, Ochterlony felt compelled to consider an attack inadvisable.

He could not feel certain of success, whereas, as affairs now stood, nothing short of final and complete success justified the certainty of heavy casualties. His force was isolated and none too strong for the work on hand, supplies were reaching him with difficulty, no assistance could be reckoned on from the 3rd Division for some time to come, and the 1,500 Gurkhas at Nahan were still uncontained. Anything short of complete success would therefore not only jeopardise his own position, but would still further lower the waning prestige of the British power, and produce in all probability the most disastrous results, military and political.

**Situation from 27th November to 27th December.**



The strength and position of the Gurkha army were estimated at this time as follows:—

On Ramgarh hill	...	...	...	1,500
On hills east of the Pass...	...	...	...	700
In other stockaded positions	...	...	...	600
Bilaspur Raja's men—				
on north side	...	...	...	500
on south side	...	...	...	500
				<hr/> 3,800

At this time Ochterlony had only about 3,000 regular infantry at Ner fit for duty.

For a month therefore nothing further was undertaken and the situation remained unchanged. Improvement of the road continued, and the battalion left at Kahanani was brought up, the line of communications being entrusted to the Patiala troops and other local levies. By the 27th December however the general condition of affairs showed some improvement. The 3rd Division had cleared Dehra Dun, and reached Nahan where, though they did nothing else, they contained the Gurkha force under Ranjore Singh Thapa, the son of Amar Singh, and relieved Ochterlony's anxiety from that quarter. On the same day the 2nd Battalion, 7th N. I., reached Ner from the plains, escorting two 18-pounder guns which had not been able to cross the ridge hitherto.

That evening, after dark on the 27th December, Ochterlony sent forward two battalions to attack a stockade east of the pass; and these, moving uphill all night over broken country, reached the top of the ridge at dawn on the 28th. Artillery being necessary, light field pieces were got up speedily and fired all day, but without much result. Early on the 29th, the Gurkhas attacked these two battalions in force, but were repulsed with loss, and immediately after abandoned their position. Subsequently they evacuated all their posts east of Ramgarh, and occupied fresh ones west of that fort, on which therefore their right now rested.

After this success Ochterlony communicated to Amar Singh Thapa an offer of the Governor-General to confirm him and his family in their lands, worth about Rs. 30,000 per annum, and to settle on him and his family Rs. 24,000 more on condition that he surrendered his army and territory. In reply, Amar Singh Thapa declared his intention of resisting to the last extremity.

A complete present state of the force in camp at Ner throws a light upon certain points of interest which are not specially referred to elsewhere. The average number of sick amounted in the seven infantry battalions to 12 per cent., the 2nd Battalion, 7th N. I., just arrived, having 9 per cent. At the same time the European artillerymen had only 5 per cent, while out of the 119 drummers and bugles, presumably Christians or low caste men, none are shown as sick. Only two men had died since last report. Wounded men cannot have appreciably affected the sick rate since the force had not been engaged for a

month and then 34 men only were wounded. The entire absence of official, and almost certainly of private, sanitation among the sepoys and followers probably accounts for much of this sickness, for while other quartermaster's establishments were provided on a fairly liberal scale, there were only six sweepers with the force, and those with the European artillery. Under-feeding also had probably much to say to the matter, since a financial coup executed by Government from motives of economy had reduced the native troops to half rations as a permanent arrangement. \*

Negotiations then having failed, it remained to bring matters to an issue by force of arms. This Ochterlony began to do forthwith. The weak point of the enemy was their base of supply, Bilaspur. As long as they could get food from thence, by the valley of the Gambar river, and thence along the crest of the range trending north-west from Ramgarh, it was possible for them to hold out almost indefinitely. Not only was Ramgarh fort on its commanding hill a very hard nut to crack, but along the crest of the range to the north-west the Gurkhas held various small posts, each of which could be used as the nucleus of successive positions, even should Ramgarh fall.

A body of irregulars under one British subaltern (always to the fore as usual) was therefore despatched by a circuitous route against Bilaspur, where on the heights above the town they were opposed by a considerable body of the Raja's troops, and defeated them. In support of this movement Ochterlony marched with the reserve of the force on the 16th January 1815 along the Erki road, across the Gambar river, to a position near the southern extremity of the Malaun ridge. The remainder of the force was left at Ner under Colonel Arnold to watch the enemy and act as circumstances might require.

The result desired by Ochterlony was attained. Amar Singh Thapa quitted his positions, leaving small garrisons only at Ramgarh and the minor posts along the range, and withdrew by the Gambar valley to the height of Malaun. Bad weather had now set in which tended to obscure this movement and delay Arnold's pursuit. However he followed up down the Gambar valley, though without coming into contact, leaving a battalion and the 18-pounders to observe and reduce Ramgarh, and took up a position at Ratanpur, on the Malaun ridge, about two miles north-west of Malaun fort, a deep depression of almost 1,000 feet separating the two positions. He thus blocked any further retirement by Amar Singh Thapa, in the direction of Bilaspur, and cut him off from his direct line of supply

**Gurkha army moves to Malaun followed by Ochterlony.**

\* Under normal procedure sepoys were provided with a standard ration on service on payment, when local purchase by them was not possible. As the cost of carriage for supplies was very great in the hills, it was arranged to give half rations only, but free. The sepoy, always willing to save his pocket at the expense of his stomach, was quite agreeable, and the saving to Government on carriage of supplies in Ochterlony's force alone in the four months, November 1814 to February 1815, amounted to nearly two lakhs of rupees.

though sufficient must have continued to reach the Gurkhas, probably by the Gambar valley.

Ochterlony backed up this movement by moving with his force down the Gamrola stream, occupying positions on the right bank, facing Malaun, and thereby getting into touch with Arnold's force. The enemy was now fairly cornered. But Ochterlony was taking no unnecessary risks. The 3rd Division was still engaged before Jaitak fort, above Nahan, his own force might yet be strengthened, and the enemy weakened. Diplomacy secured the latter. The Bilaspur Raja recognised the game was up, but as he was still capable of making himself objectionable, he secured favourable terms no less than the confirmation of himself in his possessions on the east of the Sutlej by a formal instrument under the signature of the Governor-General. These negotiations took time, but Amar Singh Thapa made no movement, beyond one sally against a body of irregulars, who broke in confusion with heavy loss; indeed it was now difficult to extricate himself from his position. The detachment left before Ramgarh secured the surrender of that fort without opposition on the 16th February by bringing up the heavy guns on to the ridge above, at close range, and during the next month three other fortified posts along the range, the furthest ten miles from Ramgarh, surrendered in succession, the majority of the garrisons enlisting into our service. Ramgarh was converted into a principal depôt on the line of communications, which was then secure. This released a portion of the auxiliary troops on the line of communications, and as the ultimate success of the British was now sufficiently obvious, swelled their numbers and overcame the scruples of the local inhabitants to supply labour and assistance generally.

The regular detachment having completed its work on the Ramgarh range rejoined Ochterlony in the Gamrola valley on the 1st April. The long delay had been well occupied in thorough reconnaissance of the Gurkha positions and the approaches thereto, while the manner in which various columns moved, some even by night, over difficult ground in the succeeding battle showed how well this duty was performed.

All was now ready. It only remained to ring up the curtain on the last act of the drama.

The scene \* is a lofty ridge,  $4\frac{1}{2}$  miles long varying in height from 4,400 to 4,800 feet above the sea, and rising steeply some 2,000 feet from the Gamrola stream, which runs in a deep cut ravine along the greater part of the front of the position. The crest of the ridge is narrow, broken here and there by commanding knolls, while from the summit the ground falls steeply at first, in places precipitously, and then swells down in broad spurs, on which in jeveller spots stand little villages. Scraggy woods clothe the ravines

**The Battle of Malaun.**  
Position of opposing  
forces on the 14th April.

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\* Vide Map 2

and the slopes here and there, but the hillsides are mostly bare, and deeply scarred by water worn ravines. At the north-west end the large stone fort of Malaun stands out clear against the sky on a commanding eminence, broken and precipitous.

On the flatter spurs around it and some 400 feet below were strong entrenchments, and half a mile along the ridge to the south-east on a corresponding knoll was another post equally well defended, and also covered by stone fortifications. Within these defences lay the main strength of the Gurkha army, and their best troops. Towards the south-east end of the ridge where stood the stone tower of Surajgarh, the Gurkhas had established on commanding knolls some half dozen defended posts with an intermediate post about the centre of the ridge. Except for this isolated post however there was a gap of over 2½ miles between the Gurkha defences near Malaun and those towards the south-east end of the ridge.

Down in the Gamrola valley, on broad cultivated spurs above the right bank of the stream, Ochterlony's army was, by the evening of the 14th April, disposed in three bodies, near the villages of Kahli, Bani, and Patta respectively, his own headquarters being established in the centre. Colonel Arnold still held his former position on the Ratanpur heights with advanced posts near Lag village on the crest of the pass, 1,000 feet below Malaun, and at the north-east exit of the pass where it debouches into the Gamrola valley.

Ochterlony's object was in the first place to seize two positions on the ridge in the weak centre of the Gurkha position, about two miles apart, one to isolate the Gurkha posts at the south-east end of the range, and cover the rear of the main attack, while the other objective was the shoulder of a spur about half a mile south-east of the main Gurkha position about Malaun, whence that position could be attacked in strength. Columns were directed to move at the same time against the lower defences north-east and east of Malaun fort to relieve pressure on the main attack and take advantage of any position being weakened.

**Ochterlony's plan of action. How carried out.**

The left column, composed of two companies of regulars, 600 auxiliaries and 300 of the recently enlisted Gurkhas, moved first as ordered, on the night of the 14th April and reached its appointed position on the crest of the ridge during the night, without opposition. Their arrival having been announced by a preconcerted signal, the remaining columns descended to the Gamrola and moved part way up the opposite slopes, where by dawn they were ready in assigned positions for the further advance. Thence, the left column was reinforced by a battalion of Grenadier companies, with guns, while two columns converged on the point selected for the main attack, and reached the crest without opposition. The force thus assembled for the main attack consisted of the Light Infantry Battalion, 2/3rd and 2/6th N. I., with pioneers, auxiliaries, and light artillery, subsequently reinforced by four companies and some detachments drawn from the left column and elsewhere.

During the operations, the 2nd Battalion, 7th N. I., four 4.2 inch mortars, and two 4.2 inch howitzers joined the force, bringing it up to 7,112 men and 22 pieces of ordnance.

In addition, a detachment of Patiala troops served with the force from the commencement, while auxiliaries from other principal Sikh States, the Hindur (Nalagarh) State, and others, served as gradually increasing members. The addition of Gurkha prisoners and deserters taken into service brought up the total of these auxiliary troops towards the conclusion of the campaign to 4,463.

Though not of high fighting value, these auxiliaries did good service on the line of communications, which was almost entirely entrusted to their charge. A certain number of Gurkha enthusiasts were brought into action in the final battle and did well.

The objective assigned was the main army of the enemy under Amar Singh Thapa—the only Gurkha force constantly in the field, the strength of which

was estimated, with approximate correctness, at 5,000 to 6,000 men, of whom not more than 2,000 were true Gurkhas. Its position was vaguely stated to be between the Jumna and the Sutlej, with headquarters at Erki. But where Erki actually was, was doubtful. It was believed to be either on or near the Sutlej, or to be identical with, or adjacent to, Nalagarh. As a matter of fact, while Amar Singh's headquarters were actually at Erki when the campaign opened, that town is 18 miles S.-E. of Basapur, the nearest point on the Sutlej, and 15 miles N.-E. of Nalagarh as the crow flies. The intervening country being a tangle of mountains and ravines, devoid of roads other than tortuous tracks, the actual marching distances are much greater—*vide map I.* at end of article.

The vagueness of the topographical and other information assigned to or obtainable by Ochterlony may be ascribed to the fact that such information

#### Information.

was being collected by the Commander in Chief some two months only before war was declared, from the few persons who it was believed might know something or who volunteered their services. Dr. Rutherford who provided the best and most accurate information regarding the Gurkha Army, its leaders, its organization and fighting value, and the topography of Kumaon and Garhwal says little regarding affairs west of the Jumna.

This gentleman being trade agent for the company at Miralab, as well as Civil Surgeon at that place, besides trading on his own account in hemp, tents, ginger and turmeric, was in intimate connection with individuals of a class in Kumaon, Garhwal, and even Nepal proper. Unwitting these sources of information, and employing Pandit Gurushidhars and others as paid spies, his services in the Kumaon campaign were invaluable, but his opinion does not appear to have been stated so far as the Gurkha force and opinions expressed by it to the various British officers, and the conviction they displayed. For other principal informant of Government, Captain Hylar Harsy, was known to be expert about

Kumaon and Garhwal, while some of his information, especially his entire underestimation of the fighting qualities of the Gurkhas and the capacity of their leaders was absolutely misleading. "As far as the Gogra from the Sutlej," he writes, "the Gurkhas could be expunged in a month." These views from one whose opinion as a former prisoner with the Gurkhas might be expected to be reliable, undoubtedly and unfortunately carried weight with Lord Moira, and influenced his plan of campaign.

It was pointed out by most informants that the normal transport, which consisted of elephants, camels, carts, and pack bullocks was unsuited to a hill campaign, and that man transport, and to a certain extent mules, were necessary. However it is clear that Ochterlony's transport consisted mainly of Brinjara bullocks, of which some 5,000 were employed in the hills, as soon as the road could be made at all practicable, while the ordnance was conveyed on elephants, one elephant per piece. Some hundreds of coolies were also used to carry artillery ammunition and equipment, but the fear of the Gurkhas prevented the hillmen from taking service in sufficient numbers until the ultimate success of the campaign was practically assured. Want of suitable transport greatly delayed and hampered Ochterlony's operations throughout.

It was also pointed out that tents and baggage should be reduced to a minimum and that suitable foot-gear was essential. The former matter settled itself directly the hills were entered. The latter was taken up, late in the day however, and it is doubtful whether some thousands of deer-skin shoes ordered through Dr. Rutherford, and of a pattern suggested by him, were ready till long after the war began. Red tape was as usual an obstructing factor. The Collector of Customs at Bareilly refused to pass the skins consigned by Rutherford to Cawnpore, where they were to be made up, without a regular permit, or payment of double duty. He peremptorily refused to accept Rutherford's explanations and remonstrances, quoting regulations at him in the most approved manner, and the matter was only settled and the skins passed late in October, after an appeal to the Governor-General.

Awar Singh Thapa, the commander of the enemy opposed to Ochterlony, was the chiefest of the Gurkha generals and administrators. He had been fighting almost continuously for some 15 years, and in that time had over-run Garhwal, Jaunsar, the Simla Hill States, and Kangra. The fort of Taragarh near Bakloh marks the limit of his power at one time. In 1809 he had applied to Ochterlony for assistance in reducing Fort Kangra, but common sense, coupled with remonstrances from Ranjeet Singh, caused his request to be refused. Thereafter he had fallen back east of the Sutlej, and in 1814 was in effective occupation of all the Simla Hill States. Taksal Fort, the ruins of which stand close to the Kalka-Simla Railway, above Kalka, was one of his advanced posts, and is

**Equipment and Transport.**

**The enemy and their commander.**

described in a report as covered by a stockade and garrisoned by about 150 men. It is a good example of the lesser forts which stud most of the country occupied by the Gurkhas. The stock-forts or towers were used as keeps, and when danger threatened they formed the nuclei of positions covered by stockades of timber and stone, and by *sungpurs* in the construction of which the Gurkhas were notably proficient.

Amar Singh Thapa was believed to be disaffected to the Nepal Government, and on several occasions attempts were made to seduce him from his allegiance. He rejected all with scorn.

The true Gurkhas were stubborn fighters. Some of the hill-men who served with them emulated their prowess, others were not averse to deserting, or changing sides, when the fortune of war went against them. Their armament was the common flint-lock musket of those days, but they preferred the kukri and close fighting. They ate frugally of rice, marched fast, and marched far, baggage being carried by women and boys, while their only covering at night was a blanket on sticks.

Much assistance had been expected by the Governor-General from the petty chiefs in these hills, who had been ousted by the Gurkhas. Events however proved the contrary. The inhabitants were cowed by the Gurkhas and rendered little or no assistance until Ochterlony's success was assured. However, they profited and so profit by the mistaken reliance upon their cordial co-operation, since the restoration to the chiefs of their former possessions was guaranteed as the consequence of our success. In spite of the fact that armed men from the majority of the petty States assisted the Gurkhas at the commencement of the campaign, this promise was kept at the close of the war.

By the end of October Ochterlony's force had assembled at Rapar,\* on the east bank of the Sutlej.

#### Capture of Nalagarh.

where the river breaks through the low Siwalik range and opens a clear way through the Dun beyond to the foot hills of the main ranges. Marching thence on the 31st October and halting a day at Pasi to pay troops and get rid of superfluous baggage, the division arrived before Nalagarh, which lies at the foot of the first steep rise, on the 2nd November 1814. The fort occupied by a Gurkha detachment, was contiguous to the ruins of the town, and commanded by adjacent heights.

It was invested and battered by four pieces of artillery from daybreak on the 4th November, for a couple of hours, when two Brahmuns came out of the fort and offered surrender. After some delay in parleying the garrison, which, including that of a neighbouring tower, numbered 84 fighting men only, marched out and laid down their arms on the 5th November. The casualties in the attacking force were unimportant and the war ended. This little military success called forth a chorus of praise and congratulation. Ochter-

\* *Field No. 1, also Field No. 2, page 145.*

lony published a congratulatory order, the C.-in-C. added his unqualified approbation, while the Governor-General communicated his high gratification, and referred to the importance of the success.

Reasons for this may be found in some feeling of uncertainty as to how the sepoy would care to face the Gurkhas, and to the fact that this success was in some measure an offset to the disastrous failure before Kalunga on the 31st October.

The Gurkha prisoners were offered and accepted service with Ochterlony's force, but in doing so discrimination was made between Gurkhas proper and hillmen in their service. The former were marched to Ludhiana as prisoners under escort of a troop of cavalry, while the latter were enlisted and formed the original nucleus, gradually augmented by subsequent surrenders, of the Gurkha element in the Indian Army.

Before Nalagarh had surrendered the enemy were reported to be **Advance from Nalagarh.** advancing in strength from Erki and Sabathu, so troops were sent on at night to cover Nalagarh, and pushing on later along the direct road to Erki occupied the high ground at Goela,\* (spelt Gailah on map 1) facing the pass which cuts through the Ramgarh range below the fort of that name.

The road, running almost due north from Goela, drops about 1,000 feet into the bed of the Chikni Nullah, and thence rises again about the same distance to the crest of the Ramgarh Pass. West of and 800 feet above the pass rises steeply the spur of the main range on which stands the fort of Ramgarh. East of the pass the range mounts again till, within  $1\frac{1}{4}$  miles of the pass, it culminates in a peak 200 feet higher than Ramgarh. Trending in a general direction of N.-W. and S.-E. the range, except for the one break where the road crosses, maintains a general level of 4,000 to 5,000 feet, broken by minor peaks and depressions.

The information regarding the enemy's concentration was **Situation before Ramgarh, 12th November.** correct. They were already in strength at and about the pass, and when on the 12th November the British force, delayed by the necessity of making the road fit for the passage of the guns, was concentrated at Goela, it was faced by 3,000 men, the flower of the Gurkha army, strongly established and covered by stockades on the heights of Ramgarh and Badu, and on the spurs trending down therefrom towards the pass and the Chikni stream.

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\* In the spelling of place names I have followed, as the latest and best authority, the Punjab Survey map, scale 2 inches to a mile (sheets 289 N.-E. and S.-E.), which differs somewhat from that used in the older survey map, scale 4 miles to the inch. The spelling used in contemporary reports is wildly phonetic and not always consistent. In some cases identification would be almost impossible except for the context. This may be ascribed to the place name being misheard in the first instance, possibly passing through several months before being written, while additional error seems to have been introduced in some cases in printing up MS. documents. The following are a few examples out of many :—

Chickeree of reports = Chikni of map.

Rumging, otherwise Burrahgong = Bariyan of map.

Kaudree, otherwise Randree = Kahanani of map.



Ochterlony grasped the situation. He had already reported as early as the 4th November, that Amar Singh Thapa showed no intention of retreating, but that, avoiding a general action on the level, he would defend every fort and stockade. Measures to intercept his retreat towards Nepal were recognised as unnecessary. Moreover, Ochterlony recorded his opinion that though Gurkha forts and stockades had been spoken of contemptuously, they were on the contrary extremely formidable and the defenders determined. In place of small detachments the force should, he considered, be concentrated on certain points and no movement should be unaccompanied by a gun or guns. It will be seen that he acted throughout on these opinions, and thereby avoided disasters which befell other divisions of the army.

Ochterlony decided to turn the left of the Gurkha position.

#### Situation how met

His reasons for choosing this flank are not where recorded, but they are fairly obvious. Strategically, a movement by this flank tended to interpose between Amar Singh and his detachment at Nahan, and to drive him back westward towards the Sutlej, beyond which river he had no friends nor allies. Tactically, a movement south-east from Gussa towards the head of the Chikni Nullah, and thence over the range, though sufficiently difficult, did not present such physical difficulties as would be entailed by a movement north-westward, in which direction also the range to be crossed was higher and more massive.

With this object therefore 2½ battalions were directed to Kahanam, a group of hamlets on the crest of the range, where the ground opening into broad plateau gives sufficient covering space, the ground between that place and the enemy's left flank to the N.W. was reconnoitred, as also the valley in their rear. Lieutenant Lawrie, the Field Engineer, whose name constantly recurs in despatches as an indefatigable and successful reconnoiterer. He died, lamented by his commander, from disease accelerated by his exertions, very shortly after the final battle of the campaign. Kahanam is spelt Kaminam on map 1.

The route to Kahanam was absolutely impassable by cart, but after some preliminary work guns were got forward on ox carts, ammunition and equipment for the same being carried by coolies.

By offers of large rewards the country people were induced to assist in making a road and by the 20th November supplies were brought up to the army then concentrated at Kahanam, securely covered by strong posts. The heights at Gussa were held by Pargana levies, and the route protected by irregulars of Hindustani. On the 23rd November, the whole force less one battalion left to take the high ground near by, broke up from Kahanam and descended to the low and more level ground leading to the rear of the enemy's position. Next day a move was made to Ner, where on a level

plateau above the Kohaj stream one and a half miles north east of, and 500 feet below, the Ramgarh Pass headquarters were established for some time to come (Ner is spelt Nori on Map (1)).

Ochterlony's force was now established directly in the former rear of the Gurkha positions, and on the route thence to Erki. The enemy's line of supply from Erki and the east was thus intercepted entirely. They still obtained assistance however in men and supplies from Bilaspur and neighbourhood.

Though thus turned, the Gurkhas showed no signs of abandoning their positions, but on the contrary showed a strong front, defended by stone breastworks and stockades, on the side now threatened, the advanced defences being pushed well down the slopes.

On the 27th November, fire was opened upon the lower stockades from batteries established during the previous night, but the range was too great and the elevation too high to produce any effect, and an intended attack was therefore deferred. However, to cover a close reconnaissance by Lieutenant Lawtie, a party moved forward to a wall within 300 yards of the stockade. The Gurkhas rushing suddenly out of their position drove the party back with heavy loss before reinforcements could reach them, and a sharp fight ensued before the situation was restored by four battalions brought into action. The advanced wall was not regained however, and the killed and wounded were left on the ground, until the Gurkhas offered to allow them to be removed. The casualties in this engagement amounted to 42 killed and 34 wounded, a sufficient indication of the severity and of the hand-to-hand nature of the fighting.

Ochterlony's intention then was to establish a battery in a more advanced position and renew the assault, an attempt which offered considerable difficulties, and certain loss of men. Neither of these considerations were in themselves sufficient to deter Ochterlony, but after sounding commanding officers (apparently regarding the spirit of their men), and on receipt on the 2nd December of the news of the second repulse of the 3rd Division before Kalunga on the 27th November, Ochterlony felt compelled to consider an attack inadvisable.

He could not feel certain of success, whereas, as affairs now stood, nothing short of final and complete success justified the certainty of heavy casualties. His force was isolated and none too strong for the work on hand, supplies were reaching him with difficulty, no assistance could be reckoned on from the 3rd Division for some time to come, and the 1,500 Gurkhas at Nahan were still uncontained. Anything short of complete success would therefore not only jeopardise his own position, but would still further lower the waning prestige of the British power, and produce in all probability the most disastrous results, military and political.

**Situation from 27th November to 27th December**

The strength and position of the Gurkha army were estimated at this time as follows:—

On Rangarh hill	...	...	...	1,500
On hills east of the Pass	...	...	...	500
In other stockaded positions	...	...	...	600
Bilaspur Raja's men—				
on north side	...	...	...	500
on south side	...	...	...	500
				<hr/> 3,000

At this time Ochterlony had only about 3,000 regular infantry at Ner fit for duty.

For a month therefore nothing further was undertaken and the situation remained unchanged. Improvement of the road continued and the battalion left at Kahanani was brought up, the line of communications being entrusted to the Pattala troops and other local levies. By the 27th December however the general condition of affairs showed some improvement. The 3rd Division had crossed Dehra Dun, and reached Nahani where, though they did not fight, else, they contained the Gurkha force under Ranjore Singh Thapa the son of Amar Singh, and relieved Ochterlony's anxiety from that quarter. On the same day the 2nd Battalion, 7th N. I. reached Ner from the plains, escorting two 18-pounder guns which had not been able to cross the ridge hitherto.

That evening, after dark on the 27th December, Ochterlony sent forward two battalions to attack the stockade east of the pass, and these, moving uphill all night over broken country, reached the top of the ridge at dawn on the 28th. Artillery being necessarily light, field pieces were got up speedily and fired all day, but with much result. Early on the 29th, the Gurkhas attacked these two battalions in force, but were repulsed with loss, and immediately abandoned their position. Subsequently they evacuated their posts east of Rangarh, and occupied fresh ones west of the fort, on which therefore their right now rested.

After this success Ochterlony communicated to Amar Singh Thapa in order of the Governor General to confirm him and his family in their lands, worth about Rs. 30,000 per annum, and to settle on him and his family Rs. 24,000 more on condition that he surrendered his army and territory. In reply, Amar Singh Thapa declared his intention of resisting to the last extremity.

A complete present state of the force in camp at Ner is given in a light upon certain points of interest which are not specially referred to elsewhere. The average number of sick amounted in the seven infantry battalions to 12 per cent, the 2nd Battalion, 7th N. I., just arrived having 9 per cent. At the same time the European artillerymen had only 7 per cent, while out of the 119 drummers and bagpipers, presumably of European or low caste men, none are shown as sick. Only two men had died since last report. Wounded men cannot have appreciably affected the sick rate since the force had not been engaged for a

month and then 34 men only were wounded. The entire absence of official, and almost certainly of private, sanitation among the sepoys and followers probably accounts for much of this sickness, for while other quartermaster's establishments were provided on a fairly liberal scale, there were only six sweepers with the force, and those with the European artillery. Under-feeding also had probably much to say to the matter, since a financial coup executed by Government from motives of economy had reduced the native troops to half rations as a permanent arrangement.\*

Negotiations then having failed, it remained to bring matters to an issue by force of arms. This Ochterlony began to do forthwith. The weak point of the enemy was their base of supply, Bilaspur. As long as they could get food from thence, by the valley of the Gambar river, and thence along the crest of the range trending north-west from Ramgarh, it was possible for them to hold out almost indefinitely. Not only was Ramgarh fort on its commanding hill a very hard nut to crack, but along the crest of the range to the north-west the Gurkhas held various small posts, each of which could be used as the nucleus of successive positions, even should Ramgarh fall.

A body of irregulars under one British subaltern (always to the fore as usual) was therefore despatched by a circuitous route against Bilaspur, where on the heights above the town they were opposed by a considerable body of the Raja's troops, and defeated them. In support of this movement Ochterlony marched with the reserve of the force on the 16th January 1815 along the Erki road, across the Gambar river, to a position near the southern extremity of the Malaun ridge. The remainder of the force was left at Ner under Colonel Arnold to watch the enemy and act as circumstances might require.

The result desired by Ochterlony was attained. Amar Singh Thapa quitted his positions, leaving small garrisons only at Ramgarh and the minor posts along the range, and withdrew by the Gambar valley to the height of Malaun. Bad weather had now set in which tended to obscure this movement and delay Arnold's pursuit. However he followed up down the Gambar valley, though without coming into contact, leaving a battalion and the 18-pounders to observe and reduce Ramgarh, and took up a position at Ratanpur, on the Malaun ridge, about two miles north-west of Malaun fort, a deep depression of almost 1,000 feet separating the two positions. He thus blocked any further retirement by Amar Singh Thapa, in the direction of Bilaspur, and cut him off from his direct line of supply

\* Under normal procedure sepoys were provided with a standard ration on service on payment, when local purchase by them was not possible. As the cost of carriage for supplies was very great in the hills, it was arranged to give half rations only, but free. The sepoy, always willing to save his pocket at the expense of his stomach, was quite agreeable, and the saving to Government on carriage of supplies in Ochterlony's force alone in the four months, November 1814 to February 1815, amounted to nearly two lakhs of rupees.

though sufficient must have continued to reach the Gurkhas, probably by the Gambar valley.

Ochterlony backed up this movement by moving with his force down the Gamrola stream, occupying positions on the right bank facing Malaun, and thereby getting into touch with Arnold's force. The enemy was now fairly cornered. But Ochterlony was taking no unnecessary risks. The 3rd Division was still engaged before Jaitak fort, above Nahan, his own force might yet be strengthened, and the enemy weakened. Diplomacy secured the latter. The Bilaspur Raja recognised the game was up, but as he was so capable of making himself objectionable, he secured favourable terms no less than the confirmation of himself in his possessions on the east of the Sutlej by a formal instrument under the signature of the Governor-General. These negotiations took time, but Asa Singh Thapa made no movement, beyond one sally against a body of irregulars, who broke in confusion with heavy loss; indeed it was now difficult to extricate himself from his position. The detachment left before Rangarh secured the surrender of that fort without opposition on the 16th February by bringing up the heavy guns on to the ridge above, at close range, and during the next month three other fortified posts along the range, the furthest ten miles from Rangarh, surrendered in succession, the majority of the garrisons enlisting into our service. Rangarh was converted into a principal depot on the line of communications, which was then secure. This released a portion of the army from troops on the line of communications, and as the ultimate success of the British was now sufficiently obvious, swelled their numbers and overcame the scruples of the local inhabitants to supply food and assistance generally.

The regular detachment having completed its work on the Rangarh range rejoined Ochterlony in the Gamrola valley on the 1st April. The long delay had been well occupied in the reconnaissance of the Gurkha positions and the approaches thereto, while the manner in which various columns moved, some even at night, over difficult ground in the succeeding battle showed how this duty was performed.

All was now ready. It only remained to ring up the curtain of the last act of the drama.

The scene \* is a lofty ridge, 4½ miles long varying in height from 4,000 to 4,800 feet above the sea, and rising steeply some 2,000 feet from the Gamrola stream, which runs in a deep ravine along the greater part of the front of the position. The crest of the ridge is narrow broken here and there by commanding gullies, while from the summit the ground falls steeply at first, in places precipitously, and then passes down in broad spurs on which the pines or spats stand at the village. A raggy woods on the the river

**The Battle of Malaun.  
Position of opposing  
forces on the 16th April**

and the slopes here and there, but the hillsides are mostly bare, and deeply scarred by water worn ravines. At the north-west end the large stone fort of Malaun stands out clear against the sky on a commanding eminence, broken and precipitous.

On the flatter spurs around it and some 400 feet below were strong entrenchments, and half a mile along the ridge to the south-east on a corresponding knoll was another post equally well defended, and also covered by stone fortifications. Within these defences lay the main strength of the Gurkha army, and their best troops. Towards the south-east end of the ridge where stood the stone tower of Surajgarh, the Gurkhas had established on commanding knolls some half dozen defended posts with an intermediate post about the centre of the ridge. Except for this isolated post however there was a gap of over  $2\frac{1}{2}$  miles between the Gurkha defences near Malaun and those towards the south-east end of the ridge.

Down in the Gamrola valley, on broad cultivated spurs above the right bank of the stream, Ochterlony's army was, by the evening of the 14th April, disposed in three bodies, near the villages of Kahli, Bani, and Patta respectively, his own headquarters being established in the centre. Colonel Arnold still held his former position on the Ratanpur heights with advanced posts near Lag village on the crest of the pass, 1,000 feet below Malaun, and at the north-east exit of the pass where it debouches into the Gamrola valley.

Ochterlony's object was in the first place to seize two positions on the ridge in the weak centre of the Gurkha position, about two miles apart, one to isolate the Gurkha posts at the south-east end of the range, and cover the rear of the main attack, while the other objective was the shoulder of a spur about half a mile south-east of the main Gurkha position about Malaun, whence that position could be attacked in strength. Columns were directed to move at the same time against the lower defences north-east and east of Malaun fort to relieve pressure on the main attack and take advantage of any position being weakened.

**Ochterlony's plan of action. How carried out.**

The left column, composed of two companies of regulars, 600 auxiliaries and 300 of the recently enlisted Gurkhas, moved first as ordered, on the night of the 14th April and reached its appointed position on the crest of the ridge during the night, without opposition. Their arrival having been announced by a preconcerted signal, the remaining columns descended to the Gamrola and moved part way up the opposite slopes, where by dawn they were ready in assigned positions for the further advance. Thence, the left column was reinforced by a battalion of Grenadier companies, with guns, while two columns converged on the point selected for the main attack, and reached the crest without opposition. The force thus assembled for the main attack consisted of the Light Infantry Battalion, 2/3rd and 2/6th N. I., with pioneers, auxiliaries, and light artillery, subsequently reinforced by four companies and some detachments drawn from the left column and elsewhere.

This central column advanced then about midday north-eastward along the ridge against the Gurkha entrenchments. The head was charged by the enemy and driven back to the original position. Strongly reinforced, the Gurkhas advanced boldly and continued to annoy the column for the rest of the day by continuous sniping\* from the cover afforded by rocks and jungle. The position was strengthened under fire by the pioneers, and levies and coolies were called up to assist in the work.

While these events were taking place, columns from Ratanpur and Kahli co-operated in attacking the Gurkha positions on the other side of Malaun fort. The 2/7th and the 1st and 2nd Battalions of the 19th N. I., were engaged in this quarter. They fulfilled their object in containing considerable numbers of the enemy, but one column from Ratanpur when approaching the enemy's entrenchments was charged and driven down hill to Lag village, and a body of irregulars was also broken further to the east. However, the columns rallied and made slight further advances, maintaining themselves till nightfall about half way up the hill, when they were withdrawn, under Colonel Arnold's orders. This seems unfortunate, as they exercised no influence upon the action next morning, but the columns had undoubtedly fallen into some confusion, were more or less isolated, and somewhat shaken in *moral*.

At the first break of dawn next morning, the 16th April, a desperate attack was made on the main, or central column, by 2,000 of the enemy, headed by Bhagti Thapa, a leader distinguished for his headlong valour, and for two hours the fight raged at close quarters, Amar Singh Thapa being observed in person, with a stand of colours, encouraging his men within musket shot range. On our side equal bravery was displayed. Lieutenant Fireworker Cartwright of the Artillery fought one gun with the help of the one unwounded man of his detachment, while the other gun was manned by two lieutenants and two sergeants of Pioneers. In spite of the impetuous courage of the enemy, they were at length repulsed, Bhagti Thapa and a host of men being slain. On our side 4 officers and 213 men were killed and wounded in this column during the 15th and 16th, the total loss sustained by the force on these days being 64 killed and 293 wounded, besides certain irregulars, whose casualties are unrecorded. All units of the division were engaged except the 2/1st N. I. which is not mentioned, and where it was employed on these days is uncertain.

This action of the 16th April was practically decisive. During the succeeding days the outlying posts surrendered, the main position of the enemy was completely invested, and one by one its encircling entrenchments

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\* The words "sniping" and "snipers" are used by Ochterlony in his despatch with reference both to his own troops and the Gurkhas, and by other officers in their reports, apparently as ordinary military terms, and in their present sense.

were given up, the defenders coming over in increasing numbers, until at last Amar Singh Thapa and 200 men alone held out in Malaun fort. Not until the fort was bombarded by heavy artillery throughout the 10th May did he consent to treat for terms, and then on the 15th May an honourable convention was concluded, whereby all forts and garrisons between the Sutlej and the Jumna were surrendered. In recognition of his gallant defence, Amar Singh Thapa and the remaining garrison of Malaun were allowed to retain their arms, baggage, and two guns, while the whole of the remainder of the Gurkha army took service with the conquerors. In all, out of the Gurkha surrenders at Malaun and elsewhere 5,000 men were formed into three battalions for service in the hills,\* under the titles (as originally spelt) of the "Nusseeree," "Sirmore," and "Kamaon" battalions, now known as the 1st, 2nd, and 3rd Gurkha Rifles.

The axiom that though details change the principles of war are immutable is well illustrated by this campaign. It is this that makes the study of even an old time and almost forgotten war full of instruction as well as interest. Though Ochterlony's men fought with muskets and against an enemy who, though brave and skilful up to a certain point, possessed little power of manœuvre, the causes of his success are identical with those which have ever led to victory in the past and will do in the future. He was faced at the outset with a fog of war as dense as ever was. Information about the enemy, his position, strength, possible intentions, fighting qualities, the nature of the country and the attitude of the inhabitants, was vague and even misleading. Ochterlony might, as others did, have havered on the frontier endeavouring to get that full information which we are often told is necessary before committing oneself to action, but which we also know by experience is but rarely obtainable. His judgment however was not at fault. By an immediate advance, straight in the direction where he was likely to find his enemy, he drew that enemy towards him, dispersed the fog by vigorous action, and four days after crossing the frontier we find him writing a clear appreciation of the situation which, though opposed to previous beliefs, was to prove correct in every particular.

Observe too how to the fullest extent he acted on the maxim, which also we know so well yet seldom have courage to apply, which bids us avoid detachments and mass the greatest numbers possible on the decisive point. When, at Goela, he decided to turn the enemy's flank he moved with every available man, and left his communications but slenderly protected, yet in such movement no great risk was run, for if the Gurkhas had moved forward in strength and descended into the valley to attack Goela, Ochterlony with full strength in hand could have attacked in superior numbers, and with no great disadvantage of ground, any containing force they might have left in their original position. Any temporary inconveni-

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\* General orders of the 26th August 1815.



ence caused by attacks on the line of communications would have been outweighed by the advantages accruing from the weakening of the Gurkha position. Again for the final battle of Malaun he concentrated his forces regular and irregular, and limiting detachments to a minimum, and those mainly of his weakest troops, he brought to bear on the decisive point the largest number of his best that the ground admitted.

It may however well be asked why did not Ochterlony attack the Ramgarh position from Kahanani, where he was already on the top of the range, instead of moving thence to the lower ground in their rear? Judging after the event it certainly seems that he did not secure any immediate advantage by this movement, he still had to attack the enemy in strong positions, while his own line of communications being lengthened necessitated one battalion being left to protect it for some time and greatly increased his difficulties of supply. The attack moreover which at the end of December resulted in the withdrawal of the Gurkhas from their position east of the pass was directed up that part of the range which is approachable from Kahanani. As despatches are silent on the point—(there are tantalising gaps in the correspondence here and elsewhere)—the reply can only be conjectural. Let us try to put ourselves in Ochterlony's position. He might, in the first place, reasonably expect support from the 3rd Division, before long. Indeed after Gillespie's death that division was temporarily placed under him and he urged its early movement towards himself. Except then for its unexpected detention before Kalunga and later before Jaitak he might expect its co-operation in protection of his exposed flank.

The enemy were unlikely to retire eastward, thereby abandoning their hold on the country, but they might fall back towards Erki, their late capital, and within the hills prolong the war indefinitely. It was desirable to bar such contingency. Dangerous on the mountains the Gurkhas were not so on more open ground. His own men trained and disciplined in close formations could be depended on on the flat, but were as yet unskilled in hill fighting. Could he rely on them to face the Gurkhas in their chosen positions on the hill tops?

By getting in the enemy's rear he might induce them to attack him on the level plateaux about Ner, at any rate that neighbourhood afforded room to manœuvre, good camping ground, and accessible water-supply. An attack on the Gurkha positions from that side moreover was easier than from elsewhere, the ground sloping fairly gently up towards the pass and the foot of the mountains. From the Goela side the approach is high and steep, while the site at Kahanani lends itself rather to defence than to attack. Between it and the nearest Gurkha post the ground constricts to a narrow steep sided neck, and then rises almost precipitously 400 feet. This was hardly a job to take on with the regular sepoy as yet, though five months later, on ground not quite so difficult, he did sufficiently well. Taking all points into consideration it will, I think, be agreed that the movement was the best in the circumstances.

It may be said too, surely Ochterlony broke his own rule regarding detachments when on the 16th January he marched off his reserve to threaten Bilaspur, and left the rest of his force in front of Ramgarh? Were not his dispositions even less justifiable when, shortly after, Arnold followed the Gurkhas down the Gambar, while Ochterlony was moving down the Gamrola valley? Here surely was Amar Singh's opportunity, Ochterlony and Arnold divided by a lofty range and the Gurkhas between them in possession of that range. Undoubtedly so in theory, and in nine cases out of ten such division of force would bring its own penalty. But note Ochterlony's previously recorded opinion regarding Gurkha tactics, an opinion confirmed by his experience of the last three months. He knew the Gurkhas would, and did, avoid coming down from their hills to risk a general action in the more level valleys, confining themselves to the defence of hill positions. While local counter-attacks from such positions were a feature of their warfare, general counter-strokes and offensive manœuvres on a large scale were beyond their powers. Here sound sense over-rode pedantic adherence to mere rules, as rules. Happy is the man who can discern where wisdom ends and pedantry begins, and who will dare to back his judgment accordingly. In this case the end sought for, cutting off the Gurkhas from Bilaspur and alienating the Raja, was not to be gained by moving the whole force on one road, let alone the consideration that such movement, owing to the length of the column, and the vileness of the hill tracks, might have failed from mere slowness.

There were two roads to be blocked, following the Gambar and Gamrola valleys, with one fair communication only between them, and this crosses the range by the depression between Malaun fort and Ratanpur height, at which latter point Arnold established himself. Once there Arnold was strong enough to hold his own for a time, while Ochterlony was near enough to operate on the Gurkha rear if they ventured an attack on Arnold, and *vice versâ*. The risk, such as it was in the circumstances, did not last long, for Ochterlony soon brought his force into touch with Arnold.

The character of the commander has already been alluded to. The influence of that character is seen throughout the operations. While alternate fits of rashness and timidity marked the career of others of lesser stability, we see in Ochterlony a strong calm judgment, restraining his hand when the situation was untoward, fighting at once and with vigour when the moment for action arrived.

The advantage to a commander of being given a free hand is also noteworthy. Ochterlony enjoyed the inestimable privilege of being his own political officer in the fullest degree. He was seldom advised, never nagged at or controlled. Whatever Lord Moira's shortcomings were as a Commander-in-Chief, he certainly cannot be accused of jumpiness or nervous interference. Given one broad task of smashing Amar Singh's army, Ochterlony was allowed to do it his own way, while to his subordinates he extended similar latitude, which was not misplaced. After all, no commander is a free agent

under the best conditions. His best intentions are circumscribed, thwarted, and marred at all times by political considerations, by the failure of co-operating forces, by difficulty of supply, of ground, weather, and the hundred unforeseen incidents inseparable from war. Such difficulties Ochterlony experienced to the full. The least that a superior can do is not to add to the difficulties of the man on the spot.

It is not possible, without dragging out this paper to inordinate length, to touch on the many other points of interest in these operations, but if I have shown that a study of this little known campaign in the Simla Hills is fraught with interest and with instruction my object has been fulfilled.



To Simla

To Simla



BAR RI  
8

B

PUNJAB SURVEY SHEET 289 (N.E)



To Ramgarh  
Sabathu  
& Erki.

MABAR RIVER runs







## CITIZEN SOLDIERS.

BY BERNARD JOHNSTON, U. P. POLICE.

As the Territorial Force exists for the definite purpose of meeting an invader, it is worth our while to consider seriously the prospect of a citizen army when opposed to an army of professional soldiers under very similar conditions to those which existed during the later phases of the Franco-German war.

In October 1870, the regular army of France had been destroyed or captured, the bloody fields of Spicheren, Wörth, Colombey, Vionville, Gravelotte, Sedan, and the surrender of Bazaine at Metz, had left the Republic without a regular army, saving three 3-battalion infantry regiments, nine regiments of cavalry, and one complete battery of artillery! The downfall of the Empire increased the confusion, and at the end of September it certainly looked to the professional soldier as if the German armies had no foe left to conquer, and if the Teutonic legions had continued in motion, there can be no doubt that further resistance would have been out of the question. But to keep moving was out of the power of the German hosts. One army sat down before Metz, another beleaguered Strasbourg, the third encircled Paris; all became immovable. This immobility gave the opportunity, and opportunity found the man in Leon Gambetta.

Leon Gambetta was a man of crude political instincts, but a patriot of the most ardent type, and possessed of an ability for organization, eloquence of the most inspiring kind, and a capacity for work equalled only by the great Napoleon. He it was who found his country defeated, disorganized, and disheartened, and who in a few weeks rendered her formidable both in organization and equipment. Why and how his efforts failed to drive out the invader, and in what manner his levies corresponded with our Territorial forces, I will now endeavour to show. The lesson, if not a pleasant one, is one which every Territorial officer cannot learn too thoroughly. The first phase of the sanguinary struggle culminated with the surrenders of Sedan and Metz. Up to these events the combat had lain between regular armies, the civilian population mixed not at all in the strife, and, on the whole, suffered comparatively lightly from the strain and stress of war. With the advent of Gambetta all this was changed, and the Germans found themselves confronted not merely by trained and uniformed soldiers but by a nation in arms. Men with guns were all around them, and no sooner was one armed crowd disposed of than another either took its place, or sprang up in a different quarter.

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## CITIZEN SOLDIERS.

BY BERNARD JOHNSTON, U. P. POLICE.

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Let us first briefly consider the composition, and so forth of these armed crowds, and then turn our attention to what they were able to effect, and how far they got towards the achievement of

their objectives, namely, the relief of starving Paris, and the expulsion of the invader from their soil. At the fall of the Empire the Garde Mobile mustered according to Hoenig, 623,458 officers and men, to which must be added 40,000 Marine infantry available for service ashore, and a considerable number of Dépôt troops, *i.e.*, fifth battalions of line regiments corresponding in a measure to our Special Reserve. Of the Garde Mobile in round numbers 180,000 had received more or less training. On the 15th of September 1870, the Republican Government ordered a levy of all the male members of the population between thirty-one and sixty years of age. Hoenig affirms that this drastic measure gave the enormous total of 788,800 men available for service. In addition to this vast host there were approximately 40,000 Franc-Tireurs, who stood in relation to the disciplined force of the Republic much the same as our own rifle clubs do to the regular and territorial armies. Of fighting men, therefore, the Republic had enough and to spare, and of equipment sufficient for the armies she was able to put into the field, nor did she suffer from any lack of competent corps commanders. D'Aurelle, Crouzat, Chanzy, and des Pallieres were all men of high professional attainments, energetic, courageous, and patriotic; that their well laid plans failed, and defeat instead of victory became their portion, was no fault of theirs; they could not achieve the impossible. Of the battalion, squadron, and company commanders little can be said in praise; many were young nobles and gentry, patriotic and brave to a fault, but crassly ignorant of military affairs; some had retired, or had been removed from the regular army, others had been elected to their posts by their own men. The rank and file of the army of the Loire, the only Republican army which gave the Germans serious trouble, was, on the whole, of excellent material. Mostly rural peasantry, they were capital marchers, intelligent, obedient, and brave; and they followed their commanders cheerfully and uncomplainingly through one of the most arduous campaigns in history. But they could not shoot individually, because they had not been taught; and they could not manœuvre collectively without falling into confusion, because their battalion and company commanders knew nothing of ordinary drill, let alone tactics and strategy. In short, the resemblance of the French Territorials of 1870-71 to our own in 1912 is too close to afford food for pleasant reflection.

With an occasional glance at the German side of the picture to enable us to understand more clearly the course of events, let us now follow the fortunes in general of these 800,000 French Territorials, and of the 200,000 men of the army of the Loire in particular; for all the hard fighting fell to the army commanded first by de la Motte-Rouge, and subsequently by d'Aurelle. The army of the West was for weeks a nightmare to Von Moltke, whose intelligence branch magnified an undisciplined mob of some 30,000 men, without artillery or cavalry, into a compact and well organized army, but it did no fighting, very prudently confining itself to sniping and worrying small hostile detachments,—all it was capable of.

Early in October 1870, the German Headquarters became aware that the south of France was beginning to stir. On the fifth of October, General Reyau with a mixed force, mainly cavalry, raided north as far as Toury, about forty-five miles from Paris, and captured some cattle. About the same time the French ventured out of the recesses of the Forest of Orleans, and took up a position along the northern edge. Reyau's raid, which was merely a dashing piece of bluff, caused a panic among the German staff at Versailles, who mistook it for an advance in force with the object of raising the siege of Paris, and Von der Tann, with about 20,000 men, all that could be spared at the moment, was directed to repel the attack. Von der Tann, a brave and skilful soldier, was so entirely in the dark concerning the strength and fighting power of the raiders, that instead of venturing on an attack, he took up a position at Arpajon, across the Paris-Orleans road, only sixteen miles south of Paris, and there for two days awaited attack. How dense must the "fog of war" have been, for Von der Tann's bogie was but a few hundred Territorials, and a few guns. From doubt and hesitation, however, the German staff seem to have passed to the height of optimism, for on 8th October Von der Tann was ordered to clear the country south to Orleans, and west as far as Chartres; he was also to rout Gambetta and the Delegation out of Tours. To accomplish this heavy task, the gallant Bavarian was given some 21,000 infantry, 6,700 cavalry, and one hundred and sixty guns. The inadequacy of this force for the task in hand shows how thoroughly the Germans misunderstood the situation. Their opening of the campaign was, however, successful. De la Motte-Rouge unwisely met the brunt of the Bavarian attack with only a small force at Artenay, some four miles north of the Forest of Orleans, and on 10th October this small body was attacked and defeated by the Bavarians, who pursued it through the forest, over the river, and out of Orleans, before the Frenchmen realised what was happening. They were too demoralised to avail themselves of their knowledge of the excellent defensive positions afforded by the forest, or to attempt street-fighting in the city, but that they fought well and steadily at the beginning of the action is shown by the enemy's losses, some 1,200 officers and men.

Von der Tann having occupied Orleans now received another order from headquarters; he was to advance against Bourges, the French arsenal, and demonstrate against Tours seventy miles down stream from Orleans. It was also suggested that he might in his spare time capture Chateauroux, where the French had a military waggon depôt. The Bavarian's sound judgment at once saw the futility of this really absurd scheme, (for when considered in relation to the force employed, and the difficulties to be overcome, absurd is the only term describing it), and he determined merely to hold on to Orleans and the country immediately around it. With his attenuated force he could not do more, for his twenty-seven thousand men were now reduced to nineteen thousand, and of these 4,000 were required to garrison Orleans. The possession

of this city was of little or no military advantage, but having captured it, the Germans felt bound to hold on to it, as its abandonment would have been regarded as an admission of weakness. If the Versailles staff as a body accepted Von Moltke's views of the French levies, that they were a crowd of ragamuffins of practically no fighting value, the losses incurred by the Bavarians in the fighting before Orleans must, one would think, have caused them somewhat to alter their views; and as if to accentuate the fact that the foe was not entirely despicable, on the 18th of October occurred the splendid defence of Chateaudun by Lieutenant-Colonel Lipowski, with 1,200 Franc-Tireurs.

By the beginning of November Von der Tann at Orleans, and Von Moltke at Versailles began to observe signs of military activity on the Loire in the direction of Tours, but as to the object of these movements the two generals came to diametrically opposite conclusions. The man on the spot, Von der Tann, thought they pointed to an attempt to re-capture Orleans; Von Moltke, the strategist, thought of the one weak spot in his armour, and came to the conclusion that an attempt would be made to raise the siege of Paris from the west; and it is extraordinary how long and obstinately he clung to this belief. It seems, indeed, as if the great strategist, accustomed to meet and defeat regular armies by the intelligent application of recognised methods, could not bring himself to grasp this new aspect of warfare. He seems to have said to himself, "Such and such is the obvious course for the enemy to adopt; they must adopt it, if not to-day, then to-morrow, or next day, and I will take my measures accordingly." So for a perilously long period Von der Tann's reports went unheeded, and the Teutonic armies were jeopardised.

On the 28th October the fall of Metz set free 100,000 men and 450 guns, and the Germans were then in a position to assist the overworked and harassed Bavarians in their task of destroying the "ragamuffins" of Gambetta. With this object, the Grand Duke of Mecklenburgh-Schwerin was given the command of a compact and handy force of some 50,000 men denominated the "Detachment," and the 2nd Army, of about 60,000 men, was also put in motion towards Fontainebleau. The Grand Duke with his detachment was to "break up the army of the Loire, and compel it to retreat by Le Mans." Space does not permit us to follow the Grand Duke's many wanderings in pursuit of an elusive, and sometimes imaginary enemy. The country in which he was operating was a tangle of wood, stream, valley, and hill; the people were bitterly hostile; he could obtain no trustworthy intelligence; Colonel von Krenski, his chief of staff, was incompetent; and the result was that H. R. H. spent most of his time wheeling round Chartres like a kitten chasing its own tail. Again, we find the "Intelligence" at fault, and the infallible strategist fallible, for the enemy so industriously hunted by the Grand Duke was only a small portion of the army of the Loire, aided and abetted by detachments from the army of the West, a foe never capable of offering effective resistance to a trained force. The real danger lay,

not in this neighbourhood at all, but south, east, and west of Orleans. Von der Tann early perceived the danger, but his reports received little attention at Versailles, either from Von Moltke or from Von Blumenthal. They were soon given reason to regret their attitude of incredulity, for on the 9th November d'Aurelle with 80,000 men and 160 guns, pounced on Von der Tann at Coulmiers, whose force was 14,000 effectives and 110 guns, defeated him with the loss of 1,300 men and two guns, and drove him off, but only just off, the battlefield. D'Aurelle, although the victor, found his Territorials so shaken by the stubborn resistance of the Bavarians, that he could not undertake the pursuit of his exhausted foe. A vigorous pursuit must have entailed the capture of Von der Tann's entire army, but as it was, the Bavarians retreated unmolested to Toury, the road to which lay open owing to the failure of des Pallieres to co-operate with his chief in the attack on Coulmiers. The French plans had been well laid by the able d'Aurelle, for while he attacked from the west, des Pallieres was to have enveloped the left of the Bavarian army from the east, and a third force to have advanced on Orleans from the south. But combined operations with partially trained troops are very liable to failure, and while d'Aurelle got home on his enemy, des Pallieres, good soldier as he was, could not get his clumsy divisions to the scene of action in time to convert the defeat into an utter rout.

Now let us devote a few minutes to the consideration of this battle between amateur and professional soldiers, between regular and territorial armies. The amateurs had every thing on their side. The friendly attitude of the country folk, aided by the physical conformation of the country, combined to produce a war-fog so dense that the invaders knew not what was happening half a mile from their outposts. Intelligence of the enemy's movements, on the other hand, was willingly furnished. D'Aurelle showed himself a tactician of a high order, his troops were stiffened by an infusion of regulars drawn from the dépôts and from Algeria, and his divisional commanders played their parts well, while in numbers he was superior to his opponent by something like five to one. What prevented d'Aurelle from annihilating Von der Tann was the inability of his battalion and company commanders to keep their half-trained battalions and companies in hand. The enemy driven off the field, the French army for the time being got completely out of control and by the morning the great chance had gone. The Bavarians were in safety at Toury, and the victorious Territorials were not in a condition to follow and destroy their exhausted foes.

The defeat of the Bavarians caused great uneasiness at Versailles, and corresponding elation at Tours. The German staff anticipating an immediate advance of the French to the relief of Paris, recalled the Grand Duke from his pursuit of a phantom foe, and placed him across the Paris-Orleans road at a point distant eighteen miles from Paris, and forty from Orleans. The cavalry of the Detachment were sent to look for the foe who had so mauled the

Bavarians; they discovered that they were not in Artenay, and that is about the extent of the knowledge gained. The whereabouts of d'Aurelle and his 100,000 men was a mystery. Von Moltke thought they were marching behind the screen of the army of the West to attack the weak spot in the circle of investment; ideas, once conceived, evidently died hard in the great strategist's brain.

As a matter of fact, d'Aurelle and his army, now heavily reinforced, were much where we left them, in and about Orleans. Again the war-fog is embarrassing the invaders, and lending its kindly aid to the Territorials. The Grand Duke, thus misled by the reports of his cavalry, deliberately turned his back on the enemy, and hurried off towards the Chartres-Dreux line, only to receive a despatch from headquarters on the 13th instant, bidding him not to take the offensive for the present. Meanwhile, Prince Frederick Charles with the 2nd Army was hurrying south from Fontainebleau. On their side, the Territorials held Dreux, Illiers, and Courville in the west in some force, and succeeded in establishing a scare at Versailles, where the question of raising the siege of Paris was seriously considered. The Detachment was now in parlous case, for although successful in various minor engagements, the French forces in the south-west were gradually edging in between it and the armies of Frederick Charles and the Bavarians.

Much marching and counter marching, with some desultory fighting, followed, and on the 18th November Von Moltke reluctantly concluded that his diagnosis of the situation was entirely erroneous, and that the real danger lay in the south from d'Aurelle, and not in the west. In the light of our recent experience in South Africa, it is curious to note that both Von Moltke and Frederick Charles considered that the re-capture of Orleans rather than the destruction of d'Aurelle's army was the desideratum to be striven for, and to this end devoted their energies.

By the 20th November, Prince Frederick Charles was at Pithiviers, and the Grand Duke at Chateaudun, searching for the army of the Loire, but encountering only the army of the West. On the 21st the 2nd Army occupied Toury. D'Aurelle's forces were still in the neighbourhood of Orleans; and at Gien, twenty-five miles south-east of that city, General Crouzat was hard at work drilling and organizing a force of Territorials formidable in numbers, but of less satisfactory material than those who fought at Coulmiers. Crouzat and d'Aurelle were in close communication, and succeeded in arranging a plan of campaign which, but for the lack of fighting power in the troops under their command, must have resulted in the complete destruction of the weak and sorely worried German armies in the south.

The next step taken by the army of the Loire was an easterly advance on Pithiviers and Beaune la Rolande, and was dictated by the Delegation at Tours. The Delegation were civilians, and took a civilian view of the situation. D'Aurelle, they argued, had 150,000 men who, if they were not regular troops, had proved themselves at

least the equal of regulars by their victory at Coulmiers ; plainly it was the general's duty to repeat the performance, and relieve Paris *viâ* Fontainebleau without an instant's delay. D'Aurelle took a different view of the situation, his military mind seeing things from an altogether different standpoint. He knew that Coulmiers, far from being a brilliant success, was only one degree short of failure. His troops had fought gallantly, but so unskilfully that although outnumbering their enemies by five to one, they were unable to reap any of the fruits of victory. The French losses had been extremely heavy, and so manifestly inefficient as a fighting machine was the victorious army that its general was by no means anxious again to try conclusions with the enemy until he had had time to give his unwieldy masses a little more training. D'Aurelle consequently remonstrated, but to no purpose.

On the German side, meanwhile, the Grand Duke had been placed definitely under the orders of Prince Frederick Charles, and it is important to note here that these two officers were on anything but good terms. On the 24th the Prince's cavalry reported Chevilly on the north-west edge of the Forest of Orleans as strongly held by the French, who were being reinforced by rail from the south. Large bodies of troops were moving not west, as anticipated by Versailles but east. These reports were correct ; the Territorials, on the orders of the Delegation, were concentrating for their great struggle with the Imperialists on the field of Beaune la Rolande, about sixteen miles north-east of Orleans. The German cavalry also captured a Colonel de Brasserie in a skirmish at Bois le Commun, and it was from him that the Prince learned of Crouzat's concentration at Gien—the first inkling he received of danger in the east as well as in the west and south.

Let us glance for a moment at the situation as it presents itself to those concerned. Versailles is not merely uneasy, it is in a positive fright. Impedimenta and records are packed, preparations are made to bury the siege artillery, and everything is in readiness for raising the siege. The ambitious projects originally confided to Von der Tann and the Grand Duke are abandoned, and Von Moltke is reduced to issuing orders and instructions which in unofficial language amount to this :—" We from the first entirely misunderstood the situation ; so far from the south of France being weak and effeminate, we find her strong and courageous, the danger we feared in the west was imaginary, that in the south is real and most threatening. The enemy's troops, so far from being a crowd of ragamuffins, are fairly well trained, and under capable generals. The fog of war is so thick that our Intelligence Department cannot pierce it. Where the enemy is we know not ; all we know is that he is strong and active. Gentlemen, you must abandon theoretical strategy ; find the enemy as you can, and hit him as hard as you can. If you cannot do this quickly, we must raise the siege of Paris, and see to our own safety."

Gambetta, and de Freycinet his war minister, a civil engineer by profession, must have been more than pleased with the aspect of



affairs, for to them it doubtless seemed that the territorial armies, creations of their own genius and energy, were about to walk over their enemies. Unfortunately their elation induced them to play at being strategists, and they sent orders to their generals sometimes through d'Aurelle, sometimes direct to corps commanders, which caused confusion and misunderstanding.

D'Aurelle, despite the vexatious interference of the Delegation, laid his plans skilfully and well. Aided by the friendly war-fog he managed to conceal his movements completely from the Germans until the 24th November, when, as we have seen above, information leaked out after the cavalry affair at Bois le Commun. By 25th November des Pallieres had reached Chilleurs aux Bois on the northern border of the Forest of Orleans, the eighteenth Territorial corps was marching on Montargis, the twentieth corps with a portion of the eighteenth were entrenched at Bois le Commun facing the German 2nd Army. The Grand Duke had his advanced guard at Mondoubleau, the rear guard was at Nogent le Rotrou, thirty miles to the north. On 25th November the Grand Duke's garrison was driven out of Brou, and it became evident that the enemy were not only between the Detachment and the 2nd Army, but were also threatening the Grand Ducal line of communications.

It is difficult to understand, bearing in mind that d'Aurelle was well informed by the country folk as well as by spies, how entirely he miscalculated the strength of the opposing forces at this time. At Pithiviers were 16,000 men. The French commander-in-chief reckoned the force at 80,000. The Detachment he estimated at 200,000, whereas it never mustered more than 50,000 of all arms. De Sonis, commanding the French forces in the south-west, was deceived by false reports that he was being surrounded by hostile troops, and consequently retired; and on the 27th the Grand Duke entered Bonneval. De Sonis had received permission to retire from Chateaudun on Orleans, but the Delegation insisted on his making a night march due south on Marchenoir, to protect Tours, a risky operation for regular troops and for Territorials absolutely foolhardy. On the march the luckless Territorials were attacked by a few cavalry patrols, and after a little firing, broke and fled in panic.

At 8 A.M. on the 28th November, Crouzat attacked the Prince at Beaune la Rolande. In round numbers the French numbered 60,000, the Germans, 10,000 effectives. The French attacked with fury, drove in the German outposts which numbered only 2,400 men, and the battle raged until nightfall, when, just as the Territorials were on the point of success, they gave way, and retreated in hopeless disorder. The Prince's army was too exhausted to pursue; and the Prince himself remained at Pithiviers until after midday. At 5-30 P.M. Von Waldersee reported that a complete victory had been gained, but he received the report with incredulity and rode back to Pithiviers in no optimistic mood. Of the defeated army the only corps not entirely demoralised was the 18th, mainly

composed of Regiments de Marche, the equivalent of our Special Reserve. On the 30th the Prince, still in the gloomiest frame of mind, visited the battlefield, and was convinced by the multitude of the slain, and other signs of the wreck of a formidable army, that he really had won a complete victory, but a barren one, owing to his hesitation and delay.

Having thus briefly sketched the events in the south-east, leading up to the victory of Beaune la Rolande, we must turn once more to the doings of the Detachment, a force which, in Prince Frederick Charles' estimation, could never do right. On the 1st December the unlucky Bavarians numbering 7,000 men were suddenly attacked by double the number of Territorials and severely punished, losing 900 men, and being driven out of Orgeres. Next day, at Loigny-Poupri, the Territorials again tried conclusions with the Imperialists. Attacking with vehemence at about 8 A.M., they caught the Bavarians in the act of taking up their position, and for some time pushed them hard. The fight raged until evening, when the French attack, ill-concerted, and disconnected, failed, and they retreated thoroughly disorganized.

Thus the attempts in the south-east and south-west had collapsed, and the Territorials were no nearer their objective than they were after the victory of Coulmiers. It was not superior strategy that gave the Germans victory, for they had made almost every possible strategical mistake. It was the superior man-killing power of their thoroughly drilled troops. Where one German fell, ten Frenchmen bit the dust, and although the Gauls outnumbered the Teutons by five to one, they were unable to stand the cruel punishment meted out to them, and the result of every considerable action was defeat and demoralisation. The Regiments de Marche and the Algerian troops showed powers of cohesion under defeat, but the Territorials broke down under the strain.

Having dealt with the engagements of Beaune la Rolande on the left, and Loigny-Poupri on the right of the German line, we must now return to the centre, *i.e.*, Orleans, where a powerful force confronted Frederick Charles. A triumphal entry into this city was the desire of the Prince's heart; to achieve it he threw his habitual caution to the winds; and marched direct for his object. It can safely be said that no general ever entered more blindly into an engagement than did Frederick Charles into the second battle of Orleans. Of the strength and composition of his enemy he knew nought, nor seemed to care; of his whereabouts, he was extremely vague. His ignorance on these points was in part his own fault, for although the dense fog of war must be held largely accountable for it, his intense dislike of the Grand Duke rendered him distrustful and incredulous of the valuable information with which that General now furnished him. That he issued victorious from the struggle was certainly not due to any generalship on his part, but to the fine fighting power of his troops and to the blunders and incapacity of the amateur leaders of the French Territorial Army. The

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Having dealt with the engagements of Beaune la Rolande on the left, and Loigny-Poupri on the right of the German line, we must now return to the centre, *i.e.*, Orleans, where a powerful force confronted Frederick Charles. A triumphal entry into this city was the desire of the Prince's heart; to achieve it he threw his habitual caution to the winds; and marched direct for his object. It can safely be said that no general ever entered more blindly into an engagement than did Frederick Charles into the second battle of Orleans. Of the strength and composition of his enemy he knew nought, nor seemed to care; of his whereabouts, he was extremely vague. His ignorance on these points was in part his own fault, for although the dense fog of war must be held largely accountable for it, his intense dislike of the Grand Duke rendered him distrustful and incredulous of the valuable information with which that General now furnished him. That he issued victorious from the struggle was certainly not due to any generalship on his part, but to the fine fighting power of his troops and to the blunders and incapacity of the amateur leaders of the French Territorial Army. The

their objectives, namely, the relief of starving Paris, and the expulsion of the invader from their soil. At the fall of the Empire the Garde Mobile mustered according to Hoenig, 623,458 officers and men to which must be added 40,000 Marine infantry available for service ashore, and a considerable number of Depot troops, i.e., fifth battalions of line regiments corresponding in a measure to our Special Reserve. Of the Garde Mobile in round numbers 180,000 had received more or less training. On the 15th of September 1870 the Republican Government ordered a levy of all the male members of the population between thirty-one and sixty years of age. Hoenig affirms that this drastic measure gave the enormous total of 788,800 men available for service. In addition to this vast host there were approximately 40,000 *Franc-Tireurs*, who stood in relation to the disciplined force of the Republic much the same as our own rifle clubs do to the regular and territorial armies. Of fighting men therefore, the Republic had enough and to spare, and of equipment sufficient for the armies she was able to put into the field. She did she suffer from any lack of competent corps commanders. D'Aurelle, Crouzat, Chinzey, and des Pallières were all men of high professional attainments, energetic, courageous, and patriotic; that their well laid plans failed, and defeat instead of victory became their portion, was no fault of theirs; they could not achieve the impossible. Of the battalion, squadron, and company commanders little can be said in praise; many were young nobles and gentry, patriotic and brave to a fault, but crassly ignorant of military affairs, some had retired, or had been removed from the regular army, others had been elected to their posts by their own men. The rank and file of the army of the Loire, the only Republican army which gave the Germans serious trouble was, on the whole, of excellent material. Mostly rural peasantry, they were capital marchers, intelligent, obedient, and brave, and they followed their commanders cheerfully and uncomplainingly through one of the most arduous campaigns in history. But they could not shoot individually, because they had not been taught, and they could not manoeuvre collectively without falling into confusion, because their battalion and company commanders knew nothing of ordinary drill, let alone tactics and strategy. In short, the resemblance of the French Territorials of 1870-71 to our own in 1912 is too close to afford food for pleasant reflection.

With an occasional glance at the German side of the picture it is enable us to understand more clearly the course of events. Let us now follow the fortunes in general of these 800,000 French Territorials and of the 200,000 men of the army of the Loire in particular. For all the hard fighting left to the army commander first by de la Motte-Roige, and subsequently by d'Aurelle. The army of the West was for weeks a nightmare to Von Moltke, whose intelligence branch magnified an undisciplined bunch of some 50,000 men, without artillery or cavalry, into a compact and well organized army. But it did no fighting, very prudently confining itself to camping at a worrying small hostile detachment. As it was capable of

Early in October 1870, the German Headquarters became aware that the south of France was beginning to stir. On the fifth of October, General Reyau with a mixed force, mainly cavalry, raided north as far as Toury, about forty-five miles from Paris, and captured some cattle. About the same time the French ventured out of the recesses of the Forest of Orleans, and took up a position along the northern edge. Reyau's raid, which was merely a dashing piece of bluff, caused a panic among the German staff at Versailles, who mistook it for an advance in force with the object of raising the siege of Paris, and Von der Tann, with about 20,000 men, all that could be spared at the moment, was directed to repel the attack. Von der Tann, a brave and skilful soldier, was so entirely in the dark concerning the strength and fighting power of the raiders, that instead of venturing on an attack, he took up a position at Arpajon, across the Paris-Orleans road, only sixteen miles south of Paris, and there for two days awaited attack. How dense must the "fog of war" have been, for Von der Tann's bogie was but a few hundred Territorials, and a few guns. From doubt and hesitation, however, the German staff seem to have passed to the height of optimism, for on 8th October Von der Tann was ordered to clear the country south to Orleans, and west as far as Chartres; he was also to rout Gambetta and the Delegation out of Tours. To accomplish this heavy task, the gallant Bavarian was given some 21,000 infantry, 6,700 cavalry, and one hundred and sixty guns. The inadequacy of this force for the task in hand shows how thoroughly the Germans misunderstood the situation. Their opening of the campaign was, however, successful. De la Motte-Rouge unwisely met the brunt of the Bavarian attack with only a small force at Artenay, some four miles north of the Forest of Orleans, and on 10th October this small body was attacked and defeated by the Bavarians, who pursued it through the forest, over the river, and out of Orleans, before the Frenchmen realised what was happening. They were too demoralised to avail themselves of their knowledge of the excellent defensive positions afforded by the forest, or to attempt street-fighting in the city, but that they fought well and steadily at the beginning of the action is shown by the enemy's losses, some 1,200 officers and men.

Von der Tann having occupied Orleans now received another order from headquarters; he was to advance against Bourges, the French arsenal, and demonstrate against Tours seventy miles down stream from Orleans. It was also suggested that he might in his spare time capture Chateauroux, where the French had a military waggon depôt. The Bavarian's sound judgment at once saw the futility of this really absurd scheme, (for when considered in relation to the force employed, and the difficulties to be overcome, absurd is the only term describing it), and he determined merely to hold on to Orleans and the country immediately around it. With his attenuated force he could not do more, for his twenty-seven thousand men were now reduced to nineteen thousand, and of these 4,000 were required to garrison Orleans. The possession

of this city was of little or no military advantage, but having captured it, the Germans felt bound to hold on to it, as its abandonment would have been regarded as an admission of weakness. If the Versailles staff as a body accepted Von Moltke's views of the French levies, that they were a crowd of ragamuths of practically no fighting value, the losses incurred by the Bavarians in the fighting before Orleans must, one would think, have caused them somewhat to alter their views, and as if to accentuate the fact that the foe was not entirely despicable, on the 18th of October occurred the splendid defence of Chateaudun by Lieutenant-Colonel Leprieux with 1,200 Franc Tireurs.

By the beginning of November Von der Tann at Orleans and Von Moltke at Versailles began to observe signs of military activity on the Loire in the direction of Tours, but as to the object of these movements the two generals came to diametrically opposite conclusions. The man on the spot, Von der Tann, thought they pointed to an attempt to re-capture Orleans; Von Moltke, the strategist, thought of the one weak spot in his armour, and came to the conclusion that an attempt would be made to raise the siege of Paris from the west; and it is extraordinary how long and obstinately he clung to this belief. It seems, indeed, as if the great strategist, accustomed to meet and defeat regular armies by the intelligent application of recognised methods, could not bring himself to grasp this new aspect of warfare. He seems to have said to himself, "Such and such is the obvious course for the enemy to adopt, they must adopt it, if not to-day, then to-morrow, or next day, and I will take my measures accordingly." So for a perilously long period Von der Tann's reports went unheeded, and the Teutonic armies were jeopardised.

On the 28th October the fall of Metz set free 100,000 men and 450 guns, and the Germans were then in a position to assist the overworked and harassed Bavarians in their task of destroying the "ragamuths" of Gambetta. With this object, the Grand Duke of Mecklenburgh-Schwerin was given the command of a compact and handy force of some 50,000 men denominated the "Detachment" of the 2nd Army, of about 60,000 men, was also put in motion towards Fontenbleau. The Grand Duke with his detachment was to "break up the army of the Loire, and compel it to retreat by Le Mans." Space does not permit us to follow the Grand Duke's very wanderings in pursuit of an elusive and sometimes imaginary enemy. The country in which he was operating was a tangle of wood, stream, valley, and hill, the people were bitterly hostile, he could obtain no trustworthy intelligence, Colonel von Kroski, his chief of staff, was incompetent, and the result was that H. R. H. spent most of his time wheeling round Chartres like a kitten chasing its own tail. Again we find the "Intelligence" at fault, and the inflexible strategical failure for the enemy soon disastrously hunted by the Grand Duke was only a small portion of the army of the Loire which and abetted by detachments from the army of the West, a foe never capable of offering effective resistance to a trained force. The real danger lay

not in this neighbourhood at all, but south, east, and west of Orleans. Von der Tann early perceived the danger, but his reports received little attention at Versailles, either from Von Moltke or from Von Blumenthal. They were soon given reason to regret their attitude of incredulity, for on the 9th November d'Aurelle with 80,000 men and 160 guns, pounced on Von der Tann at Coulmiers, whose force was 14,000 effectives and 110 guns, defeated him with the loss of 1,300 men and two guns, and drove him off, but only just off, the battlefield. D'Aurelle, although the victor, found his Territorials so shaken by the stubborn resistance of the Bavarians, that he could not undertake the pursuit of his exhausted foe. A vigorous pursuit must have entailed the capture of Von der Tann's entire army, but as it was, the Bavarians retreated unmolested to Toury, the road to which lay open owing to the failure of des Pallieres to co-operate with his chief in the attack on Coulmiers. The French plans had been well laid by the able d'Aurelle, for while he attacked from the west, des Pallieres was to have enveloped the left of the Bavarian army from the east, and a third force to have advanced on Orleans from the south. But combined operations with partially trained troops are very liable to failure, and while d'Aurelle got home on his enemy, des Pallieres, good soldier as he was, could not get his clumsy divisions to the scene of action in time to convert the defeat into an utter rout.

Now let us devote a few minutes to the consideration of this battle between amateur and professional soldiers, between regular and territorial armies. The amateurs had every thing on their side. The friendly attitude of the country folk, aided by the physical conformation of the country, combined to produce a war-fog so dense that the invaders knew not what was happening half a mile from their outposts. Intelligence of the enemy's movements, on the other hand, was willingly furnished. D'Aurelle showed himself a tactician of a high order, his troops were stiffened by an infusion of regulars drawn from the dépôts and from Algeria, and his divisional commanders played their parts well, while in numbers he was superior to his opponent by something like five to one. What prevented d'Aurelle from annihilating Von der Tann was the inability of his battalion and company commanders to keep their half-trained battalions and companies in hand. The enemy driven off the field, the French army for the time being got completely out of control and by the morning the great chance had gone. The Bavarians were in safety at Toury, and the victorious Territorials were not in a condition to follow and destroy their exhausted foes.

The defeat of the Bavarians caused great uneasiness at Versailles, and corresponding elation at Tours. The German staff anticipating an immediate advance of the French to the relief of Paris, recalled the Grand Duke from his pursuit of a phantom foe, and placed him across the Paris-Orleans road at a point distant eighteen miles from Paris, and forty from Orleans. The cavalry of the Detachment were sent to look for the foe who had so mauled the



Bavarians; they discovered that they were not in Artenay, and that is about the extent of the knowledge gained. The whereabouts of d'Aurelle and his 100,000 men was a mystery. Von Moltke thought they were marching behind the screen of the army of the West to attack the weak spot in the circle of investment; ideas, once conceived, evidently died hard in the great strategist's brain.

As a matter of fact, d'Aurelle and his army, now heavily reinforced, were much where we left them, in and about Orleans. Again the war-fog is embarrassing the invaders, and lending its kindly aid to the Territorials. The Grand Duke, thus misled by the reports of his cavalry, deliberately turned his back on the enemy, and hurried off towards the Chartres-Dreux line, only to receive a despatch from headquarters on the 13th instant, bidding him not to take the offensive for the present. Meanwhile, Prince Frederick Charles with the 2nd Army was hurrying south from Fontainebleau. On their side, the Territorials held Dreux, Illiers, and Courville in the west in some force, and succeeded in establishing a scare at Versailles, where the question of raising the siege of Paris was seriously considered. The Detachment was now in parlous case, for although successful in various minor engagements, the French forces in the south-west were gradually edging in between it and the armies of Frederick Charles and the Bavarians.

Much marching and counter marching, with some desultory fighting, followed, and on the 18th November Von Moltke reluctantly concluded that his diagnosis of the situation was entirely erroneous, and that the real danger lay in the south from d'Aurelle, and not in the west. In the light of our recent experience in South Africa, it is curious to note that both Von Moltke and Frederick Charles considered that the re-capture of Orleans rather than the destruction of d'Aurelle's army was the desideratum to be striven for, and to this end devoted their energies.

By the 20th November, Prince Frederick Charles was at Pithiviers, and the Grand Duke at Chateaudun, searching for the army of the Loire, but encountering only the army of the West. On the 21st the 2nd Army occupied Toury. D'Aurelle's forces were still in the neighbourhood of Orleans; and at Gien, twenty-five miles south-east of that city, General Crouzat was hard at work drilling and organizing a force of Territorials formidable in numbers, but of less satisfactory material than those who fought at Coulmiers. Crouzat and d'Aurelle were in close communication, and succeeded in arranging a plan of campaign which, but for the lack of fighting power in the troops under their command, must have resulted in the complete destruction of the weak and sorely worried German armies in the south.

The next step taken by the army of the Loire was an easterly advance on Pithiviers and Beaune la Rolande, and was dictated by the Delegation at Tours. The Delegation were civilians, and took a civilian view of the situation. D'Aurelle, they argued, had 150,000 men who, if they were not regular troops, had proved themselves at

least the equal of regulars by their victory at Coulmiers ; plainly it was the general's duty to repeat the performance, and relieve Paris *viâ* Fontainebleau without an instant's delay. D'Aurelle took a different view of the situation, his military mind seeing things from an altogether different standpoint. He knew that Coulmiers, far from being a brilliant success, was only one degree short of failure. His troops had fought gallantly, but so unskilfully that although outnumbering their enemies by five to one, they were unable to reap any of the fruits of victory. The French losses had been extremely heavy, and so manifestly inefficient as a fighting machine was the victorious army that its general was by no means anxious again to try conclusions with the enemy until he had had time to give his unwieldy masses a little more training. D'Aurelle consequently remonstrated, but to no purpose.

On the German side, meanwhile, the Grand Duke had been placed definitely under the orders of Prince Frederick Charles, and it is important to note here that these two officers were on anything but good terms. On the 24th the Prince's cavalry reported Chevilly on the north-west edge of the Forest of Orleans as strongly held by the French, who were being reinforced by rail from the south. Large bodies of troops were moving not west, as anticipated by Versailles but east. These reports were correct ; the Territorials, on the orders of the Delegation, were concentrating for their great struggle with the Imperialists on the field of Beaune la Rolande, about sixteen miles north-east of Orleans. The German cavalry also captured a Colonel de Brasserie in a skirmish at Bois le Commun, and it was from him that the Prince learned of Crouzat's concentration at Gien—the first inkling he received of danger in the east as well as in the west and south.

Let us glance for a moment at the situation as it presents itself to those concerned. Versailles is not merely uneasy, it is in a positive fright. Impedimenta and records are packed, preparations are made to bury the siege artillery, and everything is in readiness for raising the siege. The ambitious projects originally confided to Von der Tann and the Grand Duke are abandoned, and Von Moltke is reduced to issuing orders and instructions which in unofficial language amount to this :—" We from the first entirely misunderstood the situation ; so far from the south of France being weak and effeminate, we find her strong and courageous, the danger we feared in the west was imaginary, that in the south is real and most threatening. The enemy's troops, so far from being a crowd of ragamuffins, are fairly well trained, and under capable generals. The fog of war is so thick that our Intelligence Department cannot pierce it. Where the enemy is we know not ; all we know is that he is strong and active. Gentlemen, you must abandon theoretical strategy ; find the enemy as you can, and hit him as hard as you can. If you cannot do this quickly, we must raise the siege of Paris, and see to our own safety."

Gambetta, and de Freycinet his war minister, a civil engineer by profession, must have been more than pleased with the aspect of

affairs, for to them it doubtless seemed that the territorial armies, creations of their own genius and energy, were about to walk over their enemies. Unfortunately their elation induced them to play at being strategists, and they sent orders to their generals sometimes through d'Aurelle, sometimes direct to corps commanders, which caused confusion and misunderstanding.

D'Aurelle, despite the vexatious interference of the Delegation, laid his plans skilfully and well. Aided by the friendly war-fog he managed to conceal his movements completely from the Germans until the 24th November, when, as we have seen above, information leaked out after the cavalry affair at Bois le Commun. By 25th November des Pallieres had reached Chilleurs aux Bois on the northern border of the Forest of Orleans, the eighteenth Territorial corps was marching on Montargis, the twentieth corps with a portion of the eighteenth were entrenched at Bois le Commun facing the German 2nd Army. The Grand Duke had his advanced guard at Mondoubleau, the rear guard was at Nogent le Rotrou, thirty miles to the north. On 25th November the Grand Duke's garrison was driven out of Brou, and it became evident that the enemy were not only between the Detachment and the 2nd Army, but were also threatening the Grand Ducal line of communications.

It is difficult to understand, bearing in mind that d'Aurelle was well informed by the country folk as well as by spies, how entirely he miscalculated the strength of the opposing forces at this time. At Pithiviers were 16,000 men. The French commander-in-chief reckoned the force at 80,000. The Detachment he estimated at 200,000, whereas it never mustered more than 50,000 of all arms. De Sonis, commanding the French forces in the south-west, was deceived by false reports that he was being surrounded by hostile troops, and consequently retired; and on the 27th the Grand Duke entered Bonneval. De Sonis had received permission to retire from Chateaudun on Orleans, but the Delegation insisted on his making a night march due south on Marchenoir, to protect Tours, a risky operation for regular troops and for Territorials absolutely foolhardy. On the march the luckless Territorials were attacked by a few cavalry patrols, and after a little firing, broke and fled in panic.

At 8 A.M. on the 28th November, Crouzat attacked the Prince at Beaune la Rolande. In round numbers the French numbered 60,000, the Germans, 10,000 effectives. The French attacked with fury, drove in the German outposts which numbered only 2,400 men, and the battle raged until nightfall, when, just as the Territorials were on the point of success, they gave way, and retreated in hopeless disorder. The Prince's army was too exhausted to pursue; and the Prince himself remained at Pithiviers until after midday. At 5-30 P.M. Von Waldersee reported that a complete victory had been gained, but he received the report with incredulity and rode back to Pithiviers in no optimistic mood. Of the defeated army the only corps not entirely demoralised was the 18th, mainly

composed of Regiments de Marche, the equivalent of our Special Reserve. On the 30th the Prince, still in the gloomiest frame of mind, visited the battlefield, and was convinced by the multitude of the slain, and other signs of the wreck of a formidable army, that he really had won a complete victory, but a barren one, owing to his hesitation and delay.

Having thus briefly sketched the events in the south-east, leading up to the victory of Beaune la Rolande, we must turn once more to the doings of the Detachment, a force which, in Prince Frederick Charles' estimation, could never do right. On the 1st December the unlucky Bavarians numbering 7,000 men were suddenly attacked by double the number of Territorials and severely punished, losing 900 men, and being driven out of Orgeres. Next day, at Loigny-Poupry, the Territorials again tried conclusions with the Imperialists. Attacking with vehemence at about 8 A.M., they caught the Bavarians in the act of taking up their position, and for some time pushed them hard. The fight raged until evening, when the French attack, ill-concerted, and disconnected, failed, and they retreated thoroughly disorganized.

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Forest of Orleans was known to be held by the enemy, and to the heroic Von Alvensleben was assigned the task of clearing it. It was at Santeau, a short distance from the northern edge of the forest, that des Pallieres decided to oppose the German advance. The action began with a fierce artillery duel, but the amateur gunners were quickly silenced by the German artillerymen, and des Pallieres, about midday, was obliged to send his remaining guns back to Orleans. He proposed to cover their retreat by his infantry, who were to hold the edge of the forest until the guns were in safety, but so vigorously did Von Alvensleben press his foe that the retreat became a flight, and Chilleurs was abandoned. The German general gave his men a short rest, and then plunged into the forest. The roads were so bad that he left most of his artillery behind him and took with him only 24 guns. One last chance the Territorials had. General Minot, with his division, marching through the forest in retreat on Loury, ran up against Von Alvensleben's corps in the darkness of night, and at once attacked. The French caused momentary confusion, and seemed to be having matters all their own way, when they suddenly broke and fled, leaving five guns to the enemy. Next day the battle was renewed, and ended with the complete victory of the Germans. The desire of the Prince's heart seemed on the point of realisation, and he reported to headquarters that his army would enter Orleans on the next day, the 5th December. His chagrin and rage may be imagined when he learnt the Grand Duke had forestalled him by a few hours.

D'Aurelle, as a result of this desperate struggle lasting for two days, found his army too shaken for further effort, and ordered a retirement in two bodies. One-half, consisting of the 16th and 17th corps, moved down the right bank of the Loire on Meung and Beaugency, where they were joined by the 21st corps under that able officer and hard fighter Chanzy. Both at Meung and Beaugency there was further fighting, for the 16th and 17th corps were well stiffened by a leavening of regular troops and were not completely demoralised; but the result was defeat in every combat, and Chanzy had to lead his dispirited troops to the shelter of Le Mans. The other body, 15th, 18th, and 20th corps, under Bourbaki went in the opposite direction, eastward, where with the 24th corps they carried on the campaign on the Lisaine and were finally destroyed by Von Werder.

But I have anticipated. Before the French army was driven apart, an incident occurred which illustrates perhaps more forcibly than any I have yet portrayed the liability of partially trained troops to panic. On the 4th December the French were retreating on Orleans foreseeing a possible retreat d'Aurelle had provided entrenched positions which his troops had only to occupy; but his tired Territorials passed them by unutilised and unheeded, and when, near Ormes, they were charged by 65 hussars, a panic ensued which caused the flight of four divisions!

I have so far been more occupied with the evolutions of the rival armies and the resulting engagements than with the points of

resemblance between the French Territorial forces of 1870-71, and our own Territorial troops of to-day. I have indeed found it impossible to place the situation clearly before my readers without noticing more or less in detail the strategical positions as they appear from day to day; and without a review of the sort it would be impossible to demonstrate the hopelessness of relying upon numbers and courage against skill and training. But enough has now been said to prove the truth of the above point. We have seen how in round numbers 200,000 Territorials were opposed to 70,000 regulars. Commanded by resolute and skilful generals the Territorials as a rule had a majority on the battlefield of five to one. Yet out of five pitched battles, they gained only one barren victory, and the rest were shattering defeats. They were at times able to worry, annoy, and even bewilder the enemy, but they were powerless to prevent him from achieving his objects. Victories alone can effect this, and victories are the monopoly of skill, unity, and discipline.

The English Territorial scheme is perfect on paper; the material of the rank and file, like that of the Garde Mobile, is excellent; the officers as a body resemble very closely their French prototypes of 1870-71. Like them they are largely of good family, brave and patriotic, but possessing the merest smattering of military knowledge, and in most cases too much occupied with their civil avocations to devote much time to the acquisition of military technicalities. The same applies to the rank and file. Withdraw the adjutant and sergeant-instructors, and most Territorial battalions would become paralysed.

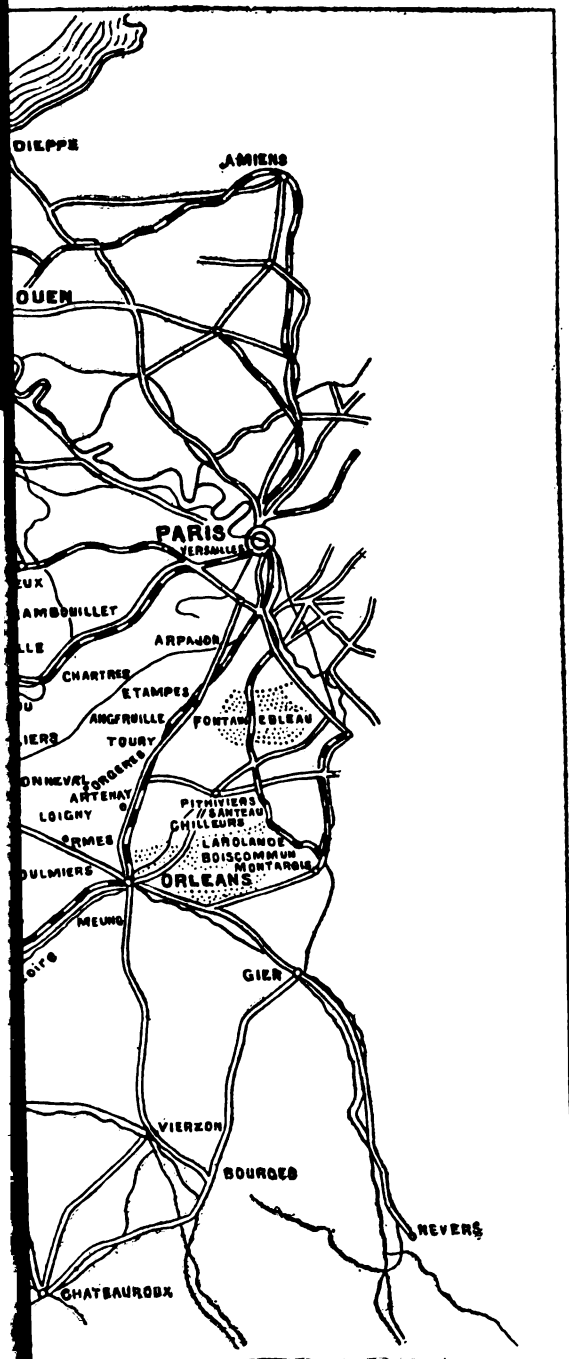
Of the French Territorial forces, by far the most efficient were the infantry battalions, for it takes much less time to bring an infantry battalion to a state of comparative efficiency than it does a regiment of cavalry, or a battery of artillery. The Territorial artillery in 1870-71 took up faulty and exposed positions; their gun-laying was indifferent; and in most engagements they were shot out of action in a very short time. The infantry were thus exposed to a merciless pounding from the German guns before they were able to close with their opponents. In this connection it is to be remembered that the British Territorial artillery is admittedly a weak spot in our organization; the guns are inferior, and the men are not given the time to acquire thoroughly the art of gun-laying and position taking, and it is doubtful whether on active service they would meet with any greater success than did their prototypes of 1870-71.

The cavalry of the French Territorials were never able to withstand the attacks of the Teutonic horsemen; men and horses were raw and untrained; they could neither deliver an effective charge nor perform the duties of reconnaissance or outpost efficiently. We have not horses, trained horses, for half our mounted forces, and the period of training for the men is lamentably short. There is, therefore, no reasonable ground for assuming that our mounted Territorials are one whit more efficient than the horsemen of the Loire.

The relative losses in the two phases of the war, i.e., the first against the regular army of the empire, and the second against the hastily-organized, badly-equipped levies of the Republic, give eloquent testimony as to the comparative fighting value of the forces engaged. The battles in which regular fought regular were most sanguinary, the losses of the Germans being equal to and in some instances exceeding the French. But when in the second phase the invaders met the Territorials, the German losses were extremely small: they were counted in scores and hundreds, while their opponents reckoned their casualties by thousands. The brave Frenchmen died for their country without stint, but, and this is the pity of it—they died uselessly; they stood heroically to be killed, but they could not kill. They showed the utmost courage, but courage alone is helpless before the combination of courage and training.

In conclusion it should be noted that raw though the French levies were, the fact that the Germans became immobile before Metz and Paris, allowed the French generals some weeks in which to bring them into something like order. It was not until 10th October or thirteen weeks from the fall of Sedan, that the Territorials had their first experience of serious fighting, and this period was put to full use by d'Aurelle and his lieutenants. But having once made the mistake of despising local levies, the Germans are not likely to repeat it, and if the Teutonic armies should ever succeed in effecting a landing on our shores, they will certainly not give our Territorials thirteen weeks in which to polish up.

# GENERAL MAP OF RAILWAYS IN FRANCE, 1870-71.







## INITIATIVE

BY CAPT. J. ROSE-PRICE, 11TH LANCERS.

It is a truism that success in battle is only attainable by a combination of all available means to gain the desired end. Following this, it is necessary, therefore, that all means should be placed, without restriction, under the control of the chief commander. But there are causes which can affect the exercise of the higher command, and amongst these are the independent actions of subordinate commanders, or, in other words, their "initiative." General de Woyde gives the following definition of the term:—"Military initiative is the quality, or rather, collection of qualities, which allows a subordinate commander to appreciate correctly every sort of situation which is presented in war, and then to take the most suitable action." Another, and perhaps better definition has been given as "the intelligent resolution that an inferior takes on his own authority and which is directed to assist the object of his chiefs." The Confederate leader Forrest laid down the fundamental principle of his own practice when he declared that he made it a rule to get there first with the most men, and that he would give more for fifteen minutes of "bulge" on the enemy than for three days of tactics!

The field of initiative of a subordinate leader can vary from the mere carrying out of minor details of a given order, up to the choice of an entirely new objective when that given by the superior becomes useless or impossible.

The two main phases of "subordinate initiative" may be classed as follows:—

(1) *Action without definite orders.*—Examples of this are the actions of Buford, west of Gettysburg in 1863 and of Bosé at Podoll in 1866. The gallantry and independent action of the latter as commander of the advanced guard led to results which only military skill, assisted by the exercise of a judiciously intrusted independence, would have recognised. In the same campaign the links of authority in the Austrian Army were preserved with a pedantry so remarkable throughout all grades that all responsibility, even under decisive emergency, devolved upon the higher commanders, producing that cumbrousness of movement which invariably give the initiative to the enemy.

In 1870, at St. Privat, the action of the Crown Prince of Saxony against the French right, as also the attacks of the I and VII Prussian Corps at Colombey, prove further the value of such independent action.

"Initiative" is often confused with a constant desire to attack. It must not be forgotten that to run straight to the field of action sometimes produces a battle which strategy does not demand or has

not prepared for. Thus at Wörth, the initiative displayed by von Kirchbach, and at Spicheren, that of Steinmetz and his generals, resulted in the failure of the strategical plans of their superiors. However that may be, these two battles were great tactical victories and as such must have been acceptable to the German higher command, though not so complete as had been desired.

These battles were won against an enemy who displayed little or no initiative. At neither did the French headquarters have any proper plan of action.

At Spicheren, Steinmetz was in ignorance of Moltke's strategical idea.

The inference is, that, in order to ensure intelligent initiative, the higher commander must first of all have a plan, and secondly, he must let his subordinates know what that plan is. The subordinate, in his turn, is to blame if he does not ask for more information as to the intention of his chief, when he is in doubt. It becomes then his duty, *whilst keeping in mind the main objective*, to take such action as will best meet any particular case.

(2) *Action indicated in F. S. R., Part I, Sec. 12, para. 13 (ii).* This type of initiative was exemplified by Hancock in 1863 when he chose the Gettysburg position in place of that selected by Meade at Pipe Creek. In 1870 there was a marked contrast between the French and Germans in this respect. At Wörth, von Werder was directed on a point in rear of the French right. He was also given the duty of guarding the German left. But he abandoned both these tasks to go to the succour of von Bosé. Doering, at Spicheren, gave up his duty of advanced guard to the III Corps, in order to support von Kameke. Against this should be noted the blind obedience of orders by the three French divisions, which were sent up to aid Frossard at the same battle. The latter had retired, leaving the important Metz road open. The French divisional commanders obeyed their orders to the letter and followed Frossard!

The exercise of initiative often results in inaction. Examples of this are seen in the battle of Colombey. Steinmetz's orders to von Goeken to support the attack of the I corps, took three hours to reach the latter. By this time von Goeken had seen that the battle was won and did not move his corps at all. Similarly when Yastrow received an order to retire his corps out of range of the Metz guns, he took it on himself to remain where he was, knowing he was safe.

True initiative must know how to choose the time when to march and when to remain inactive. A commander can only issue orders on information which is seldom complete and, in any case, may be modified by the enemy's action in the near future. Such movement may be first noticed by subordinate commanders. The deduction is that these latter must be prepared, if necessary, to ignore orders already received; but, again, *always bearing in mind the main objective*.

Turning to the Manchurian war, the deductions already arrived at appear to be verified by the success of the initiative displayed by

the Japanese subordinate leaders, as contrasted with its absence on the Russian side.

At Telissa Euda did not hesitate to attack with the 5th Division before the arrival of the brigade of the 4th Division on his left; he did this notwithstanding that the plan of the battle was a combined advance by this brigade and the 5th Division, against the Russian right. Euda's attack was made in order to lessen the pressure on the 3rd Japanese Division, who were at the time being attacked vigorously by the Russian left. His action may be traced to Oku's general "intention":—"To-morrow, the 2nd Army, staking all its forces, will drive the enemy northward."

Kuroki's move across the Taitse Ho at Liuyang is an example of initiative which dares to take great risks. It was open to Kuroki to stop this move on the afternoon of August 30th. The move was commenced on the false information of a Russian retreat, which was negatived by later reports, received *before* the 2nd and 12th Divisions had crossed the river. Kuroki, however, risked his divisions on a dangerous enterprise, 13 miles from the nearest troops on his left, and was successful against an enemy whose subordinate commanders were accustomed to render blind obedience only.

The initiative displayed by Okasaki in his attack on Manjuyama on September 1st and the lack of it in Orloff, at the Yentai mines on the same date, go to prove the contrast between the two armies in this respect.

Looking chiefly at the events of 1870 and of 1904 the conclusion is that an army whose subordinate commanders are imbued with the spirit of initiative will succeed against one in which this quality is suppressed. In France and Russia all free-will had been killed by an over-centralised system. The inertia of subordinates acted as a drag. This result was due mainly to the false conception of their duties possessed by the higher commanders in those armies. They imposed inert obedience on subordinates and denied them all right to think and act for themselves. The initiative of the German and Japanese subordinates increased the impulse given by the higher command.

But initiative is not produced suddenly. It is useless to hold subordinates in leading strings in peace, and then to expect from them a vigorous initiative in war. The higher commander cannot foresee everything. Though at times it may be inconvenient, yet it must be concluded that initiative of which *loyalty to the superior* is the motive, is an essential in modern war, and must therefore be practised in peace.

To obtain, therefore, this quality in our subordinates, we must have a system which knows how to hold the balance correctly between the rights and duties of leaders of all grades.

There is, however, one more important question to be considered, *i.e.*, the manner in which we mean to fight our battles. On occasions, we may develop practically our whole force in front line, retaining a small reserve only. The object will be to attack quickly

and to envelop the enemy's flank or flanks. Here comes the important question of the initiative of an advanced guard commander. In such a case there should be no hesitation whatever, his duty will be to attack at once, sure of speedy support from the columns in rear. If, on the other hand, we elect to fight an action with a strategic advanced guard and a large reserve, it means that we wish to retain the power of manœuvre, so as to bring off the decisive blow with this large reserve. In such a case the initiative of the advanced guard commander must necessarily be limited. If it is not, then the commander-in-chief may be forced into some undesired action, and he loses his power of manœuvre. Unlimited initiative when fighting on the latter system is likely to prove inconvenient. The conclusion is, that the advanced guard commander, above all other subordinate leaders, must be fully cognizant of the plan of battle. He will find plenty of scope for initiative in deciding how he can best help his chief.

## INDIAN ARMY CASTES.

BY CAPTAIN J. LANE, GARHWAL RIFLES.

The characteristics and customs of the Garhwali are so inseparably connected with the nature of the country which he inhabits that a brief description of the latter is perhaps essential in order that his personality and the geographical factors which affect recruiting may be adequately appreciated.

Garhwal, "The Land of Forts," is the name given to that tract of the Himalaya which lies between the districts of Almora and Dehra Dun. It is drained by the upper reaches of the Ganges, the portion on the east of this river being known as British Garhwal and that on the west as Tehri Garhwal—the independent sister-state. For recruiting purposes the former is divided into Upper and Lower Garhwal by an arbitrary boundary, and Upper Garhwal is again subdivided into six pargannahs, each of which produces a distinctive type of Garhwali. To the north the district is hemmed in by a great natural barrier formed by the Tibetan watershed, and on the south-west it terminates in the plains.

Viewed from the cantonment of Lansdowne, where the territorial regiment is stationed, the country presents a complex maze of ridges and glens, the direction and continuity of which are hard to trace, even with the aid of a map. A cursory survey of the neighbouring heights with the naked eye affords sufficient evidence that the name Garhwal is not an inappropriate one, for ruined strongholds may still be plainly seen marking the summits of conspicuous peaks, from which the Rajas of ancient times defied their invaders.

To the south, ascending by an easy gradient from the plains, is the narrow belt of low-lying broken forest-land called the Bhabar, which again rises abruptly to the higher fir-clad ranges constituting the sub-Himalayan region. These, varying from five thousand to eight thousand feet in altitude, are intersected by narrow valleys little more than two thousand feet above sea-level. To the east and north, ridge succeeds ridge into the hazy distance to be finally crowned by the white peaks of the Trisuls, Badrinath and Kedar-nath, linked by a barrier of eternal snow.

In Garhwal are to be found all the chief sources of the sacred river Ganges and that of its giant tributary the Jumna, while numberless pools, streams, and peaks throughout the country are associated with the traditions of Hindu mythology.

A people whose lot has been cast among such romantic and awe-inspiring surroundings might not unnaturally be expected to exhibit an emotional type of character, but the Garhwali is lacking in appreciation of the works of nature and is of a somewhat phlegmatic and matter of fact turn of mind. This trait cannot however be regarded as a matter for regret from a military stand-point

since nature has compensated him with the heritage of simplicity and practical qualities more essential to the profession of arms.

The unusually intersected nature of the country, alluded to above, constitutes an important factor in its influence on the health, and indirectly the character, of the Garhwali, which requires notice. Shut in by high hills on either side, the low-lying valleys of the interior are subject to intense heat during the hot weather; moreover in the winter months they remain almost continuously shrouded in mist, accompanied by excessive cold at night and great heat during the middle of the day. These trying extremes of temperature naturally induce fever, even among the permanent inhabitants, and so not only affect their physique but also render them less energetic than their more fortunately placed neighbours in adjoining villages sited at higher elevations. Thus the climatic conditions obtaining in two villages no great distance apart may vary considerably and influence their respective value for recruiting purposes. The climate on the spurs overlooking the valleys is good, and at altitudes of over five thousand feet it may be considered equal, if not superior, to that of Europe—the health and physique of the villagers at these elevations is correspondingly excellent.

The Garhwali is scarcely less pastoral than agricultural in occupation and in the latter respect it is wonderful to see what human perseverance has accomplished to overcome the difficulties presented by limited space, precipitous slopes, and poverty of soil. He is a keen shikari in his leisure hours, a fact which cannot be regarded as surprising, in view of the ideal hunting grounds among which he finds his home, which provide a diversity of quarry hard to equal, from the excellent shooting of the Bhabar and hill jungles of the interior to the unrivalled sport offered by the wild sheep and goats of the Himalayan snows.

The population presents a variety of origin and may best be described as resulting from three racially super-imposed strata. The first stratum was that of the Doms, the non-Aryan aborigines of the country. The second stratum, according to Dom tradition and other strong evidence, consisted of Nagas and Aryan invaders, the probable ancestors of the present Khasiyas and Pavilas of Garhwal, who reduced the Doms to a slavery from which they have not yet emerged. These Khasiyas were subdued by the petty chiefs of the existing clans of Kunwars, Jhinkwans, Sajwans, and Pharswans, etc. The third stratum was one of Hindus professing to be of direct Rajput origin and to have entered on the scene in the 7th century with a scion of the Lunar race, Raja Kanakpal, who is said to have conquered the country while on a pilgrimage to the time-honoured shrines of Kedarnath and Badrinath. The successors of this dynasty still rule in Tehri Garhwal, and the Chattris, who trace their advent to the same period, constitute the higher fighting classes in British Garhwal at the present day, thus indicating that the country was probably not subjected to any further conquest or influx of immigrants on a large scale.

Ancient inscriptions indicate the existence somewhere in Garhwal in A.D. 629 of a local principality under a Chinese adventurer, Brahmapura of Hwen Tsiang. From this period up to the coming of Ayala Pala in 1359, the country was divided up into small states under petty chiefs and in this respect its constitution bore a striking resemblance to that of Scotland or the valley of the Rhine in parallel times, every glen boasting its own chieftain, who left no record of the struggles of the past, except the moss-covered walls of his stronghold. Sword and shield were the only implements of war, supplemented later by the bow and arrow. These independent clans possibly formed a loose confederacy under the protection of the powerful Scythian kings of the city now known as Delhi.

Garhwalis have no written records of the past and oral traditions are so meagre that their authentic history can be reviewed here without fear of prolixity. The earliest traceable reign of a Raja is that of Man Sah in 1547 A.D., for although Ayala Pala is reputed to have subdued fifty-two Garhwali chieftains and was the first to aim at more than a local supremacy, there seem to be no grounds for supposing that his authority was universally recognised. To Mahipati Sah, the founder of Srinagar, however, belongs the distinction of being the first to establish independent government throughout the country. An amusing anecdote is related of a Garhwali Raja who was called upon by Akbar the Great to furnish an account of his revenue and a chart of his country. In lieu of a chart this wily potentate produced a decrepit camel, saying that this was a faithful representation of the land he ruled—"Up and down and very poor"—a ruse which apparently met with the approval of Akbar, who accordingly refrained from taxing the country.

Fateh Sah in 1692 is credited with having led a raid from Dehra Dun to Saharanpur and also with having extended his power into Tibet, where his hat, coat, sword and matchlock are still kept in the temple of Daba. For two hundred years or more after the accession of Man Sah, the Chand Rajas of Kumaon engaged in repeated attempts to conquer Garhwal and were as repeatedly repelled, their most successful inroad, known as the "Joshiyana," taking place in 1785, when they succeeded in penetrating as far as the capital Srinagar. In 1791 the country was invaded by the Gurkhas, who laid siege to the Langurgarhi fort, not far from the present cantonment of Lansdowne, but their efforts to take it proving unsuccessful, after twelve months they abandoned the attempt. During the ensuing years constant reprisals occurred between Gurkhalis and Garhwalis on the Kumaon border, and several further attempts to capture Langurgarhi failed.

In 1803 the Gurkhalis again invaded Garhwal; the Raja Pradhaman Sah was a man of effeminate character and being worked upon by Brahmanical prophecies and portents concerning his death, fled from the country without resistance. The Gurkha rule of twelve years which ensued was oppressive in the extreme and has



left such a lasting impression that, even to the present day, any act of tyranny is proverbially designated as "Gurkhyani." At this period the Garhwalis were in a far more primitive state of civilisation than their invaders, their arms consisted merely of bows and arrows, swords, shields, and a few matchlocks, they were not disciplined and pay was seldom distributed or expected. The Gurkhalis on the other hand had reached an advanced stage of military organization, affecting European dress, arms, and exercises, and even English rank-denomination.

None of the great Musalman rulers ever seem to have been successful in subjugating Garhwal, in fact we read that Aurangzeb was continually harassed by the thought that the Garhwali Raja Pirthi Sah might suddenly descend upon him like a torrent from his mountain fastnesses. In 1815 the district was annexed by the British and as an act of clemency the State of Tehri Garhwal was handed over to the Garhwali Raja.

At the present day the population, which is essentially a rural one, consists almost entirely of Hindus, who may be divided into four classes, *viz.*, Khasiyas, who form the most important element, the immigrants of the 7th century, Bhutiyas, and Doms.

Doms, who only constitute a small fraction of the whole population, are short, dark men with an Ethiopian type of visage. The Garhwali clans have held them in servility for centuries, still regarding them as unclean, degraded, and less valuable than cattle.

The Khasiyas and immigrants of the Kanakpal era between them possess two-thirds of the land and form the section of the population to which the name of Garhwali is most correctly applicable. Like the Gurkha, both claim descent from Rajput sources, but Khasiyas are partially of Naga origin—an Aryan race to whom the hooded snake was sacred, hailing from Central Asia and once widely spread over Northern India. The Nagas were probably among the first invaders of the peninsula, but are quite distinct from the well known Aryan invaders of the Punjab who came after them and from the tribe of the same name to be found on our Assam frontier. They now only exist as a recognised element in Kumaon and Garhwal, where certain traces of this mysterious people are still found, such as snake emblems, the name of the *pargannah* Nagpur and the universal tradition of their residence in the valley of the Alaknanda. Chattris and Khasiyas consider their loss of the religious status of the pure Rajput to be due to the impossibility of carrying out orthodox observances in the climate of their adopted country; the former are of higher lineage and hold themselves superior to Khasiyas in many ways, but the line of demarcation is becoming daily fainter. The name Khasa is of very wide signification and by a rather bold speculation has been traced from Mount Caucasus and the Caspian in the west to the Khasiya hills in the east. Even if the truth of this surmise cannot be acquiesced in in its entirety, it is at least supported by the derivation of the words Kashmir and Khasdes, the ancient name for Kumaon.

In these highlands class names may be said to correspond to surnames in Europe or, more accurately still, to the clans of Scotland. The commonest among these are Rawat, Bisht, and Negi, which are Khasiya names; if such surnames have a qualifying prefix, *e.g.*, (Mona) Negi, it signifies a superior family of the clan in question. Such a prefix was assumed by the lords of the soil, who added the names of their fiefs to their nominal suffix in order to distinguish themselves from the original Khasiyas, many of whom had adopted the Rawat, Negi, and Bisht nomenclature. Ghurduras alone can claim to be the aristocracy of Garhwal, since they are related to the present Raja of Tehri, but other high-class families exist, principal among which are the Bartwals of Nagpur, the Kunwars of Chandpur, the Aswals of Sila (Talla Salan) and the Bhandaris of Chauthan, which all claim Rajput origin.

Next in importance, forming one-quarter of the population, are the hill Brahmans. For centuries this priestly class has been in evidence in the country—a fact which is due to the presence of the sacred Hindu shrines of Kedarnath and Badrinath, which attract pilgrims yearly from every corner of the peninsula. The Sarola Brahmans are the parent family and were deputed by the Rajas of old to cook the royal meals, while Gangari Brahmans held important posts in the time of the petty chieftains. Lately a strong feeling of rivalry has sprung up between these two leading factions. Hill Brahmans are not now enlisted in either of the Garhwali battalions, chiefly owing to their caste-prejudices in the matter of food and drink, but in other respects they exhibit attributes which show that they would probably make excellent fighting men. These Brahmans are not as orthodox as their namesakes in other parts of India, and although they have a certain influence over the peasantry in their duty of casting horoscopes at birth and are a final authority on all religious matters, the villagers do not as a rule adhere to their observances and dogmas.

The least important section of the population are the Bhutiyas, who are easily distinguished by that peculiar cast of physiognomy characteristic of a Mongolian strain. They are entirely a trading tribe and still owe a nominal allegiance to the Tibetan Government. An universally accepted tradition has it that they crossed the snowy passes and settled in Tibet centuries ago, returning to their original country after a long sojourn there. It is occasionally observed that, in some cases, Garhwalis bear a facial resemblance to Tibetans, but, whatever the source of this likeness may be, it undoubtedly has no foundation in racial admixture.

In considering the various sections of the population, it must not be lost sight of that, when speaking of a Garhwali, only those claiming Rajput descent are alluded to, for between these and the Doms, and even Brahmans, a gulf of rigid marriage laws is fixed, while the Bhutiyas exhibit a further distinction in their language which is of Tibetan origin. The Garhwali, on the other hand, speaks a purely Hindi tongue consisting of a large assortment of

"patois," which vary in the different pargannahs. A fairly representative dialect is in vogue in Srinagar, the capital, which may be regarded as the present standard of true Garhwali. To the new-comer the sing-song cadence of the language recalls the articulation of the Scot. The people are for the most part bilingual, quickly learning to express themselves in moderately pure Hindi. The script is Nagri.

But little is known of the religion of the original inhabitants of the country, the Doms. They have adopted Hinduism to a great extent and have a tradition that they were employed by Mahadev as drummers, on the auspicious occasion when he first selected the Himalaya as his permanent abode. It is improbable however that their creed has had any influence on that of the Garhwali, whose religion, although it differs radically from the orthodoxy of pure Hinduism, emanates from the tenets of his ancestors and the influence of the Brahmans, which has existed throughout the course of ages. It is interesting to notice that in the past Khasiyas have been described as "knowing no Brahmans" and going still further back, we find that they did not adopt the Vedantic religion until after the great cataclysm which resulted in the extermination of Buddhism from these regions.

Supreme among Garhwali deities is Siva, formerly worshipped as Pasupati, who is known as the lord of animals and believed to take great delight in bloody sacrifices. The crude and horrible form of worship of this god has latterly been rejected and he is now only recognised in the more refined form of Siva. The symbol of Pasupati, based on the triple peaks of the Trisul, is the Garhwali trident, which is found erected in various parts of the country to signalise the victories of the Rajas and may fairly be claimed as a typical national emblem. Among the peasants of the highlands Siva is worshipped, or rather propitiated, as Bhairava, and Vishnu is little known. The popular religion is a religion of fear, hence the god Bhagwan is universally respected; he is named the "Great God" and controller of evil spirits, by means of whom he is believed to inflict punishment indiscriminately, unless constantly appeased.

In time of need the peasants usually have recourse to the non-Brahmanical and less orthodox deities. All personal offerings are treated as a compact between the god and the supplicant, and accordingly, when prayers are not answered satisfactorily, abuse is heaped upon the deity and the offerings forfeited. Such village gods are numerous and vary in popularity with the locality, but there appears to be a progressive tendency towards neglect of these *dei minores*.

A picturesque belief exists that the whirlwinds of attenuated snow driven in gusts off the summit of the Kedarnath peak, which seen from far below, present the appearance of wreaths of smoke hovering over the crest itself, are the materialisation of Vishnu in the form of sacrificial vapour, in acknowledgement of the offerings of some particularly favoured devotee. The upper tracts of Nagpur

and Painkhanda too are held to be the favourite resorts and playground of gods and goddesses, who assembling there for their sports and pastimes make the country resound for miles with the noise of their voices and laughter. This belief is enhanced by the many curious sounds which undoubtedly are to be heard in this vicinity. These have been variously accounted for but are probably due to the echo produced by falling trees and avalanches, carrying incredible distances and altering its original character in rarified atmosphere.

Belief in demons, from whom all evils are supposed to emanate, is still widespread, and ghosts of old bachelors known as *tolas* are declared to haunt dark spots, other ghosts or *bhuts* being credited sometimes with malignant and sometimes harmless intentions. Heaps of stones are often to be seen at cross-roads in various parts of the country, which represent the peace offerings of travellers to the divinity of the spot, and many mountains and peaks are objects of veneration, especially Nandadevi, on which there is said to exist a lake selected as his abode by Vishnu himself: another rather common superstition prevails that the wearing of a scarlet neck thread constitutes an antidote to goitre and all throat affections.

The privilege of wearing the *janeo* or sacred thread is confined to the Brahmans, who are entitled to nine strands, and Chattris, who are entitled to six strands only. Many Khasiys usurp this privilege, though they have no claims to its adoption.

It must not be supposed that the dogmas and ceremonies, especially in connection with fasts and feasts, which are observed by the Brahmans, in any sense depict the faith of Garhwalis, the majority of whom express entire ignorance of the greater part of these tenets, although they observe some of them in a crude distorted form.

Among the old families it is customary for each man who can afford it to have two or more wives, and considerable importance is gained by the possession of more than one. The first wife is usually treated with greater respect than her successors, who generally owe their position to the fact that their lords are landowners in more than one village and consequently require extra hands to administer the property. In Garhwal women do nearly all the field-work except ploughing. Marriages are often costly undertakings, the outlay varying from twenty-five to fifteen hundred rupees, but little affection is expected or shown, except towards the offspring, to whom the parents are devoted. Very early marriages are not *de rigueur*.

In social customs with regard to the eating of food the Garhwali does not exhibit the usual prejudices associated with his religion. The only restrictions which exist are in the matter of eating cooked rice and *dal* but other food is eaten indiscriminately in the company of any Garhwali, irrespective of his family. He is very frugal in his diet and is a meat-eater, although he takes exception

to a few forbidden animals and all carnivora. Goats, hill sheep, and venison are much appreciated, but a strong prejudice exists against the plains sheep with its long tail, which is regarded as a species of dog. The villagers consider most herbs edible, a belief for which they often have to pay dearly.

The national costume of those who hail from the more northern parts of the country is usually of coarse woollen material and that of the midlands of hemp, the southerners wearing calico garments imported from the plains. Homespun goat's hair is the material used for the manufacture of the woollen dress, which consists of a grey-brown blanket, thrown over one shoulder and under the other, fastened over the chest with a metal or wooden skewer and girt round the waist by a *kamarband*. Under the blanket a *langoti* or loin-cloth is strung round the hips on a piece of cord, the legs remaining bare. The northern peasants wear their hair in long locks, often reaching to the shoulder, surmounted by a thick woollen cap; and the whole effect, enhanced by their ruddy complexions and well-knit frames, is as picturesque as it is primitive. In the midlands the costume is similar in style but light-grey in colour. This form of dress, as may be imagined, is far from being a warm one, but both sexes of these hardy little mountain folks are able to wear it with impunity throughout the year. Where access to the plains or cantonments is not difficult, cotton fabrics and garments of European manufacture are often purchased by the villagers—a custom which is unfortunately spreading, to the detriment of their picturesque appearance. Among those of any position or education a Norfolk jacket of thick cloth is very popular; this is usually worn in conjunction with jodhpurs of the same material and a little round cap tilted over the right ear, which on festive occasions may be adorned with a rose or other flowers.

As becomes a highland race Garhwalis are sturdy in build and independent in disposition. They are short in stature, agile, and lithe of limb. The northern pargannahs produce the shortest men, of ruddy complexion and robust physique, who are capable of carrying very heavy loads, undergoing great fatigue, and travelling the whole day without sustenance. Essentially a mountaineer, and living in the region of the snows, at higher elevations than any other enlisted tribe, they can hold their own with most as expert cragsmen and keen hunters. A corpulent Garhwali is never seen except among those who have been for many years in Government service.

In character these little hillmen are simple-minded, scrupulously honest in money transactions, and faithful to trust imposed in them, consequently, pilfering or crimes of a serious nature are almost unknown. Dacoities only occur in the southern hills and cases of theft are practically restricted to the pilgrim route—a direct highway from the plains to the temples at Kedarnath and Badrinath. They are sober-living, even-tempered, and up to middle age of excellent spirits; under restraint or compulsion inclined to exhibit impatience; their sense of self-respect is high and monetary aid is

always forthcoming to those in trouble or difficulties—a charitable trait which is reflected in the entire absence of beggars in the district. Total abstinence is not popular, but although a modicum of alcohol, especially rum, is much appreciated, intoxication is extremely rare.

The inhabitants of the southern hills are usually of poor physique and incapable of carrying very heavy loads. They are more sophisticated than those of the upper pargannahs, owing to contact with civilising influences, and sometimes exhibit a tendency to inertness and lack of truthfulness—characteristics which undoubtedly render them as a whole less valuable as soldiers than the highlanders of central and northern Garhwal, who are essentially open and engaging, energetic and manly. As with most hillmen, modern ideas of cleanliness and sanitation are only practised when inculcated. In money matters the Garhwali is quite untutored and incapable of looking after his own interests, being generous and extravagant when in possession of hard cash. He is fortunate in possessing a sense of humour and an open disposition akin to that of the Gurkha, which touches a sympathetic chord in the British character, and he exhibits a distinct taste for music, quickly adopting himself to English methods. The chief national instruments, excluding the drum, are a crude form of piccolo and a double reed-pipe played like a chanter.

In the earliest history of the Garhwalis fighting held a prominent place. For centuries scarcely a year passed in which they were not called upon to combat the persistent attacks of invaders or engage in an expedition in retaliation, and every credit must be given to them for their martial qualities in successfully repelling so many of the Gurkha incursions; the more so when it is remembered that their organization and equipment were comparatively primitive. When, added to this, the well known military propensity and courage of the latter foe are taken into account, the resistance offered by the Garhwali can only be regarded as a criterion of his innate fighting capacity. In 1814 about two-thirds of the western army of Nepal consisted of Garhwali levies and again from 1814-15 we find him fighting shoulder to shoulder with the Gurkha in resistance to the English, while the heroic defence of Kalanga fort against the British is now historical.

Passing to more modern times, his attributes as a soldier have been so inseparably merged in those of the fighting classes, chiefly Gurkhas, with whom he has been enlisted and has served under British rule, that his prowess in the field and other personal soldierly qualities have not received that individual recognition which they deserve. An examination of the records of the Garhwali as an enlisted rifleman affords eloquent proof of his eminence in the past in the ranks of his erstwhile brothers-in-arms. At the time of the Mutiny out of 10·5 per cent of Indian Order of Merits for valour awarded to men in three regiments in which Garhwalis were then enlisted, 9·8 per cent were gained by this class alone, while more recent

statistics show that an equally high standard has been maintained both in the numbers of those rising to commissioned ranks and those by whom decorations for bravery have been gained.

In addition to the men of Upper and Lower Garhwal previously enlisted in Gurkha regiments, men from the lower pargannahs figured largely in the hill-companies of plains-regiments, among whom were a not inconsiderable number of Garhwali Brahmans, who appear to have acquitted themselves well whenever put to the test. During the Mutiny of 1857 numbers of Garhwalis served at Delhi in the ranks of the 2nd K. E. O. Gurkhas, and Colonel Fisher speaks enthusiastically of their conspicuous gallantry throughout the siege. On this occasion, when the rebels were attempting to join their comrades at Delhi, volunteers were called for from the garrison to swim down the river at night and set fire to the bridge of boats, and it is interesting to read that one of the first men who stepped forward for this dangerous task was a Garhwali, a fact all the more creditable since swimming is necessarily a neglected art in his mountain home.

In January 1886 the question of raising a separate Garhwali Battalion was mooted and the views of commanding officers of Gurkha regiments were solicited. The very high opinion of this class expressed by the latter and the capacity which they have exhibited for coming to the fore in the ranks of a fighting race which is admittedly second to none, constitute a lasting chronicle of their military worth. The few cases in which adverse criticism was offered were due to the superficial manner in which the recruiting potentialities of Garhwal were exploited at that time, when geographical boundaries were not strictly adhered to, with the result that in some cases Kumaonis, hill Brahmans, and men infected with Pandes customs were enlisted under the name of Garhwalis, while such as came from Northern Garhwal were not infrequently styled Gurkhas.

Lord Roberts, in advancing the proposition of raising the new battalion, wrote as follows:—"The men would be of an excellent fighting class. The present 5th Gurkhas had many Garhwalis in its ranks, who have repeatedly proved themselves brave and faithful soldiers and are considered by the officers of that corps as equal to the pure Gurkha in pluck and physique. The other Gurkha regiments count their Garhwalis as amongst their best soldiers and all the officers who know this class best, speak in the highest terms of their qualifications." In 1887 the scheme was set in motion and all Garhwalis serving in Gurkha regiments were drafted into the new battalion which was designated the 2nd Battalion, 3rd (The Kumaon) Gurkha Regiment, composed of two companies of Gurkhas and six of Garhwalis. When it was finally decided in 1891 to form an entire battalion of the latter, the nucleus was created from the six companies mentioned, the remaining two being completed from Garhwalis serving in other corps. This experiment proved so successful that a 2nd battalion was raised in 1901.

With regard to the stamp of man now enlisted, when carefully chosen he exhibits good physique and great powers of endurance. Given the close interest and attention which he deserves, he shows energy and alertness in the performance of his duties and a keen interest in games—cheerful in success and at his best under adverse circumstances, such interest is fully repaid. No tendency exists to screen comrades in failures of duty, but nevertheless all are amicable in temperament and personal quarrels are almost unknown. Dishonesty in accounts is very rare, any discrepancy being usually traceable to ignorance or carelessness.

The system of messing now in vogue is a simple one. When in barracks the men feed in section-messes and on enlistment each recruit agrees to mess on service or manœuvres with his whole company. Much goes to prove that prejudices in the matter of eating are rapidly declining—a change which is probably due to the rigid exclusion of Brahmans from the ranks—and during the last decade no difficulties as regards messing, individual or otherwise, have come to notice.

In the selection of recruits, certain points require very careful attention, since the quality varies from the inferior stamp hailing from the low valleys and southern hills to the first class fighting material to be found among the highlanders of the interior and northern regions. In one of the two existing battalions recruits are drafted to companies by *pargannahs*, each company being reserved for a separate *pargannah*, while in the other they are drafted in indiscriminately. Both systems appear to work equally well as regards messing and interior economy.

Recruits are not usually taken whose chest measurement falls below 34". The average height of those who come in for enlistment is 5 ft. 4 inches, which may be regarded as the ideal measurement. Men under 5 ft. 2 inches in height are found to be somewhat at a disadvantage in the matter of marching and manipulating the rifle, even though in other respects of a good stamp; while those over 5 ft. 5 inches in height lose in physique what they gain in stature. When selecting a recruit a good *vade-mecum* in order of importance is:—locality—name—physique—physiognomy

On first presenting themselves, many recruits show signs of ill-nourishment, but it is little short of marvellous to note how rapidly they are capable of putting on flesh and developing physically under the regime of regimental life. Doms are rigorously excluded from the ranks, while men from the borders of Kumaon and those bearing certain caste names which indicate the possibility of Brahman origin require particularly careful selection.

Dark men have not usually been found successful, perhaps because their colour may sometimes be due to life at low elevations or to a Dom strain. As a rule preference should be given to the blanketed recruit, since his garb indicates that he hails from tracts which do not adjoin the precincts of civilisation, but at the same time it must be remembered that Southern Garhwal often produces men



who prove excellent, if carefully picked, and make the best signallers, football players, and specialists, and that the southerner has contributed in a very large degree to the reputation of the Garhwali in the past, before recruiting was properly exploited. There is little doubt however that the northerner is the best soldier, more unsophisticated, possessing greater energy and better physique; moreover, although he has no great capacity for education, he is not inferior in natural intelligence.

Taking into consideration the manner in which he has come to the front in the past, although in the minority, while serving in the ranks with one of the finest fighting races of India, and in view of his records of integrity, conspicuous deeds of gallantry and capacity for command, the Garhwali may justly claim as his heritage a place in the first rank among the martial races of this peninsula, and those who have the privilege of serving with them and commanding them may confidently look forward to their upholding in the future those soldierly qualities which they have always vindicated in the past—"intelligent on all occasions, forward in action, steady under fire and in danger, willing and obedient in the lines."

## THE ARAB REVOLT IN KERAK.

BY MAJOR C. C. R. MURPHY, 30TH PUNJABIS.

No sooner had the Turkish Expedition into the Hauran been brought to a conclusion than the Young Turks began to turn their attention further southwards in the direction of Kerak.\* A reference to a map of Syria and Palestine shows that ancient Moabite capital as lying about midway between the Hedjaz railway and the south-eastern shores of the Dead Sea. From time to time numbers of European travellers have visited Kerak, though remarkably few have penetrated into the inhospitable wilds which stretch away from the Dead Sea towards Ej Jauf. To anyone standing on the Mount of Olives in Jerusalem and looking down over the shining levels of the Dead Sea, the high ground immediately above Kerak is plainly visible though the town itself is hidden from view. The physical geography of this wonderful country forms an interesting study, for here we have a river which almost at its source flows through a lake 530 feet below sea-level, and finally empties itself into another lake which is no less than 1,300 feet below that level. By a strange coincidence the latter figures also represent the depth of the Dead Sea.

Towards the close of November 1910, the Sublime Porte, acting directly on the advice of the then Wali of Damascus, sanctioned the despatch of a small force to Kerak to strengthen the garrison of that town whilst the new orders regarding disarmament and the enrolling of conscripts were being carried out. The troops selected for this purpose had formed part of the Hauran Expeditionary Force which was just then being broken up. The work of disarmament and conscription had been so easily and successfully accomplished amongst the Druses that the Wali of Damascus had no difficulty in persuading the central government to adopt a similar procedure with regard to the district of Kerak. To the Young Turk the project was of course an attractive one, and appealed to his frothy pretentiousness most strongly; but Sami Pasha, who had commanded the expedition against the Druses, and was himself an Arab, knew that the Government were not strong enough to enforce such measures on the Kerak Arabs, and he accordingly declared himself entirely opposed to the scheme. However, in spite of this warning, the additional troops were sent to Kerak, the intentions of the Government were duly communicated to the sheikhs of Kerak, and their co-operation invited. The news spread like wildfire amongst the neighbouring tribes with a result which shook the new and jerry-built fabric of the Constitution to its very foundations.

The Commandant of Kerak, little dreaming of the trouble that was brewing, summoned the sheikhs of Kerak to a conference to

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\* Reference map of Syria published in Journal for October 1911.

to a few forbidden animals and all carnivora. Goats, hill sheep, and venison are much appreciated, but a strong prejudice exists against the plains sheep with its long tail, which is regarded as a species of dog. The villagers consider most herbs edible, a belief for which they often have to pay dearly.

The national costume of those who hail from the more northern parts of the country is usually of coarse woollen material and that of the midlands of hemp, the southerners wearing calico garments imported from the plains. Homespun goat's hair is the material used for the manufacture of the woollen dress, which consists of a grey-brown blanket, thrown over one shoulder and under the other, fastened over the chest with a metal or wooden skewer and girt round the waist by a *kamarband*. Under the blanket a *langoti* or loin-cloth is strung round the hips on a piece of cord, the legs remaining bare. The northern peasants wear their hair in long locks, often reaching to the shoulder, surmounted by a thick woollen cap; and the whole effect, enhanced by their ruddy complexions and well-knit frames, is as picturesque as it is primitive. In the midlands the costume is similar in style but light-grey in colour. This form of dress, as may be imagined, is far from being a warm one, but both sexes of these hardy little mountain folks are able to wear it with impunity throughout the year. Where access to the plains or cantonments is not difficult, cotton fabrics and garments of European manufacture are often purchased by the villagers—a custom which is unfortunately spreading, to the detriment of their picturesque appearance. Among those of any position or education a Norfolk jacket of thick cloth is very popular; this is usually worn in conjunction with jodhpurs of the same material and a little round cap tilted over the right ear, which on festive occasions may be adorned with a rose or other flowers.

As becomes a highland race Garhwalis are sturdy in build and independent in disposition. They are short in stature, agile, and lithe of limb. The northern pargannahs produce the shortest men, of ruddy complexion and robust physique, who are capable of carrying very heavy loads, undergoing great fatigue, and travelling the whole day without sustenance. Essentially a mountaineer, and living in the region of the snows, at higher elevations than any other enlisted tribe, they can hold their own with most as expert cragsmen and keen hunters. A corpulent Garhwali is never seen except among those who have been for many years in Government service.

In character these little hillmen are simple-minded, scrupulously honest in money transactions, and faithful to trust imposed in them, consequently, pilfering or crimes of a serious nature are almost unknown. Dacoities only occur in the southern hills and cases of theft are practically restricted to the pilgrim route—a direct highway from the plains to the temples at Kedarnath and Badrinath. They are sober-living, even-tempered, and up to middle age of excellent spirits; under restraint or compulsion inclined to exhibit impatience; their sense of self-respect is high and monetary aid is

always forthcoming to those in trouble or difficulties—a charitable trait which is reflected in the entire absence of beggars in the district. Total abstinence is not popular, but although a modicum of alcohol, especially rum, is much appreciated, intoxication is extremely rare.

The inhabitants of the southern hills are usually of poor physique and incapable of carrying very heavy loads. They are more sophisticated than those of the upper pargannahs, owing to contact with civilising influences, and sometimes exhibit a tendency to inertness and lack of truthfulness—characteristics which undoubtedly render them as a whole less valuable as soldiers than the highlanders of central and northern Garhwal, who are essentially open and engaging, energetic and manly. As with most hillmen, modern ideas of cleanliness and sanitation are only practised when inculcated. In money matters the Garhwali is quite untutored and incapable of looking after his own interests, being generous and extravagant when in possession of hard cash. He is fortunate in possessing a sense of humour and an open disposition akin to that of the Gurkha, which touches a sympathetic chord in the British character, and he exhibits a distinct taste for music, quickly adopting himself to English methods. The chief national instruments, excluding the drum, are a crude form of piccolo and a double reed-pipe played like a chanter.

In the earliest history of the Garhwalis fighting held a prominent place. For centuries scarcely a year passed in which they were not called upon to combat the persistent attacks of invaders or engage in an expedition in retaliation, and every credit must be given to them for their martial qualities in successfully repelling so many of the Gurkha incursions; the more so when it is remembered that their organization and equipment were comparatively primitive. When, added to this, the well known military propensity and courage of the latter foe are taken into account, the resistance offered by the Garhwali can only be regarded as a criterion of his innate fighting capacity. In 1814 about two-thirds of the western army of Nepal consisted of Garhwali levies and again from 1814-15 we find him fighting shoulder to shoulder with the Gurkha in resistance to the English, while the heroic defence of Kalanga fort against the British is now historical.

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decide how the orders of Government could best be carried out. The sheikhs said that a strong girdle of posts ought to be thrown round the town, which would have the effect of impressing the tribes with the might and power of the Government. This was accordingly done, and by the 4th of December sixteen posts had been established round the town each consisting of 2 guns and 40 rifles, the remainder of the troops being left behind in the citadel. This however, was but the kiss of Caiaphas; for the whole garrison only consisted of two *taburs*, so that the sheikhs had contrived to get the bulk of the infantry, and nearly all the guns, scattered about outside the town. Suddenly at sundown on the 4th December, without the slightest warning, the Kerakis began firing on the Turkish soldiers. Hordes of Arabs came swarming into the town from every direction, and in an incredibly short time were to be seen thronging the streets and running along the roofs of the houses shooting down every Turkish soldier or Turkish official they could find. A scene of indescribable confusion followed. All the men in the detached posts were quickly cut down with the exception of two in each post who were forced at the point of the knife to turn their guns on to the citadel, where their more fortunate comrades were now surrounded. The Arabs then looted the treasury and the *sooks*,\* making off with three thousand five hundred Turkish pounds which they got out of the Government chests, and a large sum of Regie tobacco money besides. No sooner was the pillaging of Kerak completed than the Arabs fled across to the Hedjaz railway where they created the most astounding havoc, completely wrecking four railway stations, and damaging seven others. They broke all the telegraph instruments, cut down the poles, tore up great lengths of rails at intervals for about ninety miles, killed several railway officials, and then held up a train which they looted and afterwards burnt. At the end of four days they disappeared as quickly as they had collected, having killed altogether about eight hundred Turkish soldiers, and a considerable number of Turkish officials. The damage to the Hedjaz line alone amounted to £100,000, but the total loss to the railway funds must have been vastly greater owing to the stoppage of traffic and the consequent falling-off in returns. Nor was this all; for the pilgrims who had left Damascus early in November and who were still in Mecca, were unable to return to their homes by the Hedjaz railway and thousands of them had to make their way to Jeddah and go back by sea instead. So much for the Arab veneration of the *Haj*.

The discomfiting news of the Kerak revolt soon reached the ears of the Government in Constantinople, who strove by every means in their power to conceal the true facts of the case. And well they might, for the whole Ottoman Empire was now on the verge of collapse. The situation in European Turkey was almost critical; the outbreak in the Hauran had been but temporarily driven under the surface; a disturbance was threatening in the

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\* Bazaars.

vilayet of Baghdad ; desperate trouble was brewing in the Yemen ; there was but a momentary lull on the Russo-Persian frontier ; and now the storm centre had unexpectedly shifted to Kerak. If the masses came to realise the deep-seated differences of race and language that lay at the bottom of the Kerak revolt the consequences would be unthinkable. Official reports were therefore circulated stating that the Arabs, enraged at the discontinuance of the annual subsidy of £4,000 which had hitherto been paid to them by the Government for protecting the Hedjaz railway, had been incited by the Druses to rise, and had thrown in their lot with them in the raiding of Kerak, and the massacre of the Keraki Christians. The astounding mendacity of these reports would be made apparent by the most cursory review of the real facts of the case. The sole causes of the rising were, as we have already seen, the attempt on the part of the Turkish Government to disarm the Kerak Arabs, and to introduce compulsory service amongst them. Not a single Druse took part in the rising nor was it directed against anyone but the Turkish soldiers and Turkish officials, and least of all against the Christians. It is true that four Christians were killed, namely, two men, one woman, and one child ; but they were accidentally shot in the course of the street-fighting. In a country like the Ottoman Empire where religious law prevails, and where every war against a non-Moslem enemy is at once invested with a religious character, it is very natural that one should hear much boasting about the bonds which are said to exist between the Turks and their co-religionists all over the world. To tell the truth about Kerak would therefore have been not only an enormous admission on their part, but it would have exposed the *sheria*\* to ruthless mockery, and drawn attention, at a most critical juncture, to the fatuous and illusory nature of the devotion to the Khalifate for which all Arabs are given credit.

I have before me a copy of the *Muqtabas*, the leading newspaper in Damascus, in which the whole Kerak incident is dismissed in one paragraph of four lines, the translation of which is as follows :—

“Yesterday 150 Bedouin horsemen raided the station of Al Qatraneh on the Hedjaz line and plundered it and killed the station-master and wounded several persons ; and they continued to hold up the trains by firing at them ; and communications between Amman and Maan are cut.”

The “150 horsemen” in reality consisted of many thousands of Arabs belonging to the following tribes :—Mujelli (the ruling Keraki family), Hamaideh, Atami, Salaiteh, Hajaiyeh, Saidin, Ghawarni, and Jawabari. It is a significant fact, and one that must have been consoling to the Government, that the powerful Beni Sakhar, the Raw-Allah, and Hawaitat took no part in the rising whatever.

Kerak was not relieved till Wednesday, 14th December, and for ten days the remnants of the garrison were shut up without food or

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\* The religious law of Islam

water. Kerak is situated on a hemispherical hill, and the water-supply is outside the town and comes from a nullah which surrounds the hill. The water-supply is about twelve hundred feet below the citadel, and although the Turks have been in occupation of it for nearly nineteen years\* they had made no provision for a water-supply inside the town. When the relieving force from Der'aa arrived the first thing General Salah-ud-din did was to dig up the graves of the former sheikhs of Kerak, and fling their bones to the wind. He then ordered the troops to bury the bodies of their murdered comrades in the empty graves. This act of vengeance of course greatly enraged the Arabs, and if possible widened the abyss which has always yawned between them and the Turks.

The Sublime Porte could do but little in the shape of taking reprisals. Punitive measures against the Arabs of the desert were of course out of the question, whilst nothing could be done to improve the defenceless condition of the Hedjaz railway. The Government had no means at their disposal to increase the tiny garrisons which are to be found at many of the railway stations between Damascus and Maan, such as Deraa, Amman, El Hassa, and Jauf ed Dervish; or those of outlying posts such as Tufela. Numbers of Kerakis were carried off to Damascus, where they were cast into dungeons and treated with the utmost brutality. The prisons were already crowded with Druses, and typhus fever soon began to make fearful ravages amongst the prisoners. Some were publicly hanged, and many others died of disease; and then finally about two hundred of them, amongst whom was Yahia Atrash, the Druze chief, were sent away to the island of Rhodes in perpetual exile.

It is worthy of note that as soon as the Keraki Arabs realised that they had kicked over a hornets' nest, they turned to the *British* Government for help. Berlin may be the Qibleh of the Turks, but not of the Arabs; and I have authority for stating that a sheikh of one of the Arab tribes concerned in the Kerak revolt sent a message to H. B. M.'s Consul in Jerusalem asking that assistance might be sent to them from Egypt. Whether the message was actually delivered or not I am unable to say, but that is immaterial. From what has preceded it is hoped that the reader will have gained some idea of the political importance of the Kerak affair as a whole. The question of disarmament and conscription in the country round Kerak has been shelved indefinitely, and the Turks have been made to realise that if they wish the Hedjaz railway to remain open, they must keep in with the Arabs.

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\* A permanent Turkish garrison was finally established in Kerak, after many failures, in November 1893.

## AN ANCIENT WEAPON OF INDIA.

BY CAPTAIN F. R. LEE, U.B.V.R.

Most Englishmen in India who turn aside from railways and see the people amid surroundings as yet little influenced by Westernism are sometimes struck by the extraordinary survival of antiquity. In remote villages, side by side with the ubiquitous kerosene oil tin, the sewing machine, and the vulgar advertisement of a patent baby food, lie the stone quern, the hand-loom, and the immemorial threshing-floor. The shikari who tracks your game will handle with reverent wonder your rifle, the latest product of a Bond Street maker. Very likely his own gun is a matchlock of a pattern coæval with that used in England in the reign of Elizabeth; or yet again he may still be, as it were, living in the days before gunpowder, trusting to a bow and arrows to bring game to bag, aided by woodcraft and the strength of his own archery. Of these survivals one of the most interesting is the *chakra*, or war quoit, of the Sikhs. To those Europeans who have dealings with Punjabis its appearance is more or less familiar. Together with the steel bracelet, the head knot, and the linen drawers it forms the four-fold symbol of the Sikhs' political and religious unity.

In the days before the modern gospel of "peace and comfort" had arisen, war in a righteous or any other cause was reckoned an ennobling and exalting pursuit. The Crusader sealed his word on the sacred symbol of his faith, the cross hilt of his two-handed sword. His brave Muhammadan antagonist shaped his scimitar like the Crescent, which has been and ever will be the staunchest foe of the Cross. Among the Guzaratis, the Katar or punching dagger was held so sacred that no document was binding unless stamped with a representation of it. Colonel Tod in his "Annals of Rajasthan" tells us that the Rajput worshipped his sword, and like the Japanese and the mediæval knights of Europe he regarded feats of swordsmanship as the best way to keep alive the spirit of patriotism and chivalry. It is therefore not strange that the Sikhs, a community whose religion was war, should have adopted the war quoit as one of their religious emblems. The other weapon which, among the Akali sect, shares with the quoit this distinction, is the steel bow.

As a head-dress the quoit is worn by the Gurus, or priests, and by Sikh soldiers in the British service. Swathed in the pagri it forms an excellent protection from sword cuts, just as the chain plate, a survival of the complete coat of mail, guards the shoulders. The word *chakra* is as old as the Aryan languages; etymologically it is connected with the English slang word "chuck" and the old Hindu "phenkna" to throw, by the same law that connects "pente" and "quinque."



The history of this curious weapon is very obscure, and is only to be gathered with difficulty from occasional notices in the writings of travellers and from wall paintings in a few cave temples scattered through India. No Encyclopædia of Sport has yet discovered the merits of this most sporting weapon. So far as is known, the only paper describing it is a long forgotten article by the present writer in a London magazine. Sir R. Payne-Gallwey, the learned historian of the cross bow and one of the greatest living authorities on the gun and game shooting, a few years ago gave an exhibition of quoit throwing in the grounds of the Royal Toxophilite Society in Regent's Park, the headquarters of English archery. These, with half a dozen references, mostly inaccurate, in books, comprise all our available information on the subject. Where or when the "wheel" weapon had its origin no one knows: probably before the Vedas were completed. In the Mahabharata it is spoken of as the weapon of Krishna, by which in the wars of the Kurus and Pandavas for the kingdom of Hastinapura, he overcame his enemies. The battle of Kurukshetra lasted eighteen days and his exploits with the *chakra* are thus described in the Khandava-daha Parva. "Krishna, the slayer of foe, full of might, slew the hosts of the Dasya and Danava with his *chakra*, and Asuras numberless and of immense power. They pierced by Krishna's arrows and smitten by the might of his *chakra* fell dead and lay flabby like fish cast up on the shore by the violence of the waves." "Then the dark hued strongly armed Keshava hurled for their overthrow his large resplendent *chakra*. The Danavas and Rakshashas dwelling in the forest were cut into innumerable pieces and fell into the jaws of Agni. And the *chakra* hurled ever and ever by the hand of Krishna, slayer of demons, after the slaughter ever and ever returned to his hand." In another place it is written, "Hari slew with his *chakra* the demons, the Rakshashas, the Danavas and Snake Heads that rushed in armies against him. By the swift flight of the *chakra* their heads were severed from their bodies and they fell dead beneath the sun." In the later Brahmanism the *chakra* is one of the weapons of Vishnu, the sun god, and was often shaped like a conventional figure of the sun with flame-like projections round the periphery. It is possible that that most ancient symbol the Svastika is connected with the *chakra* and with the sun symbol, for it has been pointed out that the Svastika is properly drawn with the spokes pointing in the direction in which the sun revolves. The *chakra* long retained its wheel-like shape with cross bars through the middle. It thus appears on drawings of Vishnu and when used as a caste mark and as an iron emblem on the spires of Vishnavite temples, Vishnu is often represented as having in each of his four hands the *sankha* or conk shell, the *gada* or club and the *padma* or lotus flower. If he is endowed with eight arms, as in some of his Avatars, the sword, shield, and arrow are added.

The description of this singular weapon, however highly coloured by the poets, points to a very ancient origin. Few weapons have reached perfection without passing through simpler stages, and the

writer is inclined to think that the origin of the quoit must be sought in the throwing knife. This is not the weapon familiar to Zingari jugglers and conjurers of the circus, which is a pointed implement, but rather the curved sickle-shaped throwing knife used in ancient Egypt and by some aboriginal tribes of South India. Conceive one of these without its handle; it would look something like a crescent, and thrown edgewise would have a tendency to skim like the flat stone with which boys play "ducks and drakes" on the village pond. By still further bending round the two extremities the shape would approach that of a circle, the cutting edge would be lengthened and the power of skimming flight proportionately increased. The transition to the complete circle with the edge developed to the utmost might well have happened in some such fashion. There is however no direct evidence that the *chakra* was ever anything else but circular. Up to the tenth century of our era it retained its wheel-like shape with spokes across the centre. This is clear from various wall frescoes in Buddhist temples at Badami and elsewhere.

The familiar English quoit though similar in shape was probably derived from the Greek "*diskos*." Originally this was a heavy flattened stone, perhaps a water-worn pebble, picked up on the seashore. It was never used as a weapon, but in a trial of strength. Later the material was iron and its use was revived in the recent Olympic games. The English quoit is held and thrown quite differently to the *chakra*. There is no comparison between the slow heavy toss of the English quoit and the airy swallow-like skimming flight of the Indian weapon. One is a toy, excellent in its way, the suitable rival of such games as curling, bowls, and skittles. The other was a warrior's weapon, capable of doing no small execution in the days before gunpowder, and well calculated to demoralise badly armed men and to throw horses into confusion.

From the ninth and tenth centuries of our era until 1516 I have not been able to find any reference to the *chakra* but in writings subsequent to that date the following references have been found:—

"In the kingdom of Dely they have some steel wheels which they call *chacarani*, two fingers broad, sharp outside like knives and without edge inside, and the surface of these is the size of a small plate, and they carry seven or eight of these each, put on the left arm, and they take and put it on the finger of the right hand and make it spin round many times, and so they hurl it at their enemies." (Barbosa 100-101, 1630.) "In her right hand she bore a chuckery, which is an instrument of a round form and sharp edged in the superficies thereof: and slung off in the quickness of his motion, it is able to deliver or convey death to a farre remote emeny." (Low, Disc. of the Bania Religion, quoted in Yule's *Hobson Jobson*.) In the reigns of Shah Jehan or Aurangzeb, Tavernier, the famous French traveller and jeweller, met a party of Faqirs or Muhammadan Dervishes near Sidpur. He says: "Ils etaient tous bien armés; le plupart avec des arcs et des flèches, les uns avec des mousquets et les autres avec des piques courtes, et une espece d'arme que nous

n'avons pas dans l'Europe. C'est un fer aigu, fait comme le bord d'une plaque sans centre, et on mets huit ou dix sur la tête en les portant autour du col comme fraise. On ôte ces cirques quand il-y-a besoin de les employer. Et quand on les jette avec force contre un homme comme nous faisons voler une plaque, ils presque le coupent en deux. (Tavernier " Voyage dans l'Inde.") Lieut.-Colonel Lewin says in his book, "A Fly on the Wheel," "On the march, 13th January 1859, we met a Sikh regiment which was going to our late quarters at Futtehpore, and I was most kindly entertained by the officers, after the hospitable custom of the country. The Sikhs were extremely fine bodied and handsome men. Many of them wore polished circlets of steel sharp edged, around which their many folded turbans were twisted; and when at sundown the men were amusing themselves with games in the cool of the evening, I learnt how they were used. The sharp edged disc was thrown quoit fashion, skimming through the air, and at a distance of two hundred yards these men planted their discs very accurately in a tree trunk. The missile in its flight took first a slight upward curve and then swooped down with a slant upon the object aimed at, a deadly weapon indeed to descend upon an unwary head." To judge from this account Sikhs have degenerated since 1859, or the gallant Colonel's estimate of the distance is faulty. Though I have watched numbers of Sikhs use the quoit they rarely throw at a greater range than 50 yards and even then few would plant their quoits "accurately" in a tree trunk. In his valuable hand-book "Indian and Oriental Arms and Armour," the late Lord Egerton of Tatton gives a sketch of a Sikh throwing the quoit, and a drawing of the weapon, copied from a specimen in the British Museum, and partly quoting from Captain Mundy, who was in India in 1827, says: "The Sikh soldiers dressed in tunics of quilted cotton and silk with a peculiar red turban and cummerbund of the same colour. Their legs were bare below the knee, and they were all armed with a spear or sword and black shields of buffalo hide studded with brass. But the arm that is exclusively peculiar to this sect is the quoit. It is made of beautiful thin steel sometimes inlaid with gold: in using it the warrior twirls it swiftly round the forefinger, and raising his hand over his head launches it with such deadly aim, as according to their own account, to be sure of their man at eighty paces. The quoit is worn only by the Akalis, who are armed to the teeth. They wear in obedience to their founder, the tenth Guru Govind, nothing but steel, and blue cotton cloth, steel bow, sword, shield, brace of horse pistols or collection of daggers, and sometimes as many as six quoits round the arm and on the top of their high conical turban." Here Captain Mundy evidently did not see the men throwing, and seems to doubt the account which the Sikhs gave of the accuracy of their exploits. It will also be observed that the cast by these Sikhs is much more modest than the 200 yards spoken of by Colonel Lewin.

Nothing but the whim of the owner appears to regulate the size of these quoits. They vary in width from that of a large

bracelet to a circle with a diameter of one foot. For ordinary use quoits of the following size are recommended. Diameter 8 inches, width of ring  $1\frac{1}{4}$  inch, inside thickness of ring  $\frac{1}{16}$  to  $\frac{1}{12}$  inch, tapering to a razor edge round the circumference. One surface is flat, the other slightly convex. The material should be the finest elastic sword steel. To temper a *chakra* calls for much skill. If the temper is too high, there is risk of the quoit breaking should it strike a hard substance: tempered at a low heat it quickly loses its shape and will not fly accurately. Quoits are not made by welding two strips of steel as might be expected, but are cut out of a solid plate, and then tempered and ground. At Amritsar, Ferozepore, Lahore, and in some of the smaller towns quoits are still made. Those who are willing to pay the price can even find skilled and artistic workman to inlay a *chakra* with gold wire. This *Koftgari* work as it is called is extremely effective. Expensive it certainly is, but the best work is priceless. The real *Koftgari* must not be confused with the imitation. In the latter case gold is rubbed into the surface of the steel which has been superficially scratched with a graving tool. Most of the gold work on the locks of the more expensive class of English guns is of a similar kind to the pseudo-*Koftgari*. Genuine *Koftgari* consists in deeply incising the pattern in the soft steel. Into the grooves thus cut, pure gold wire is hammered. After tempering the process is complete. The design then stands out clear cut against its steel-blue background and being part and parcel with the steel is practically indestructible.

Proficiency in the art of throwing the *chakra* is difficult. To those who may wish to learn it the following hints are offered:—At the outset use quoits with blunted edges, and go into a large empty field as free from stones as possible. Like the boomerang the quoit in the hands of a novice is a dangerous and uncertain weapon. Its flight is difficult to control; any person within a hundred yards is liable to be hit. In competitions among Sikhs in India the usual mark at fifty yards is three interlaced banana trees about ten feet high, each tree about ten feet apart. For practice one tree is better, and in default of a banana tree a strip of bamboo wrapped in white paper makes a capital target. To cultivate careful and low throwing the writer generally practises at an ordinary cricket stump stuck so lightly in the ground as to fall readily when hit. From the accounts of Barbosa and Captain Mundy quoted above, it appears that formerly the quoit was thrown by “twirling it round the forefinger.” If such a method exists the writer has never come across it, though he has seen Sikhs quoit throwing in various parts of the Empire from Rawalpindi to Rangoon. His own attempts to throw thus have always resulted in a sore finger and complete failure to achieve either pace or accuracy. Nowadays the quoit is held and thrown much as the village schoolboys throw a flat stone to make it skim along a pond. The edge of the quoit rests on the left side of the forefinger and is retained there by pressure of the thumb. The forefinger is either bent inwards so as to rest under the rim of the

quoit, or is extended along its inside edge. In this position the weapon projects behind the hand exactly as if it were a piece of cardboard or a book which one throws at a mark (a most improper use for literature, but one that best explains our meaning). Before throwing, stand inclined half right with reference to the mark. To illustrate the act of throwing recall the motion of throwing the cardboard or book. The arm is raised above the level of the shoulders with the edge of the quoit leading and directed to the mark in the plane of the intended flight. The whole body shares in the swing much as the motion of a bowler contributes to the momentum of the cricket ball. The wrist flick of a good thrower at the end of the swing is almost incommunicable on paper. All else being equal its possessor beats by many yards him who throws by arm swing alone. The master thrower appears to use little effort because all his movements are properly correlated, yet his quoit flies fast and low and with force enough to sever the thickest banana tree. The novice after a violent effort often succeeds in burying his quoit in the ground at his feet or sends it in a wild lofty flight a hundred yards or so on either side of him far away from the mark. The Sikhs always keep their *chakras* bright and clean but a better grip is got when the steel is rusty. If throwing is done in wet weather a dry cloth is necessary for wiping the mud and moisture from the quoit. As a weapon of war the quoit was naturally kept as sharp as a razor though this is neither desirable nor necessary in practice for sport. It is impossible to offer rules for throwing, applicable to all the varying states of wind and weather. Here observation alone will assist. Generally speaking, in a head wind the edge of the quoit should incline downwards, and with a following wind either level or slightly upwards.

## REVIEWS.

**The Principles of Sanitary Tactics.** By E. L. Munson, A.M., M.D., Major, Medical Corps, United States Army, Fort Leavenworth, Kansas, U. S. Car. Association, 1911.

In the Journal of April 1911, we reviewed "A Study in Troop Leading and Management of the Sanitary Service in War" by Lieut.-Colonel Morison, General Staff, and Major Munson, Medical Corps, United States Army. The book at present under review is written by the latter of these officers, and although published at a later date is really a preliminary volume, dealing with the medical tactics of smaller units, in isolated situations, and leading the student up to the question of the medical arrangements of larger forces such as are dealt with in "A Study in Troop Leading and Management of the Sanitary Services in War."

In both books the word "sanitary" is used where we would employ the term "medical." They both deal with the management of the medical service in the field. For "Sanitary Tactics" we should use the words "Medical Tactics."

The volume under review is lucid and interesting, beginning by a sketch of the evolution of the modern system of medical aid in armies and pointing out that as late as the American Civil War, the American army had a cumbersome and impractical regimental system of medical aid, destructive of combatant tactical efficiency, pernicious from a humanitarian standpoint, and resulting in a frightful state of disorder in the arrangements for removing the wounded from the field of battle. It describes the up-hill fight of Surgeon-General Hammond to have an ambulance corps formed and to have the whole system put under the medical department. The fight was long but eventually successful, and as a result, in the action at Marye's Heights at the time of the battle of Chancellorsville, with over 800 wounded in half an hour, the medical organization controlled by the medical director had removed the whole number of wounded to the hospitals, two hours after the action. Again at Gettysburg (even though the commanding general had reduced the supply wagons for the medical department), the day after the battle ended, not one of the 14,000 wounded was left on the ground.

Since, in the American army, the medical director has complete control of the organization for the treatment and removal of sick and wounded from the front the author points out the necessity of the subject of "medical tactics" being made a part of the education of medical officers. He demonstrates the fallacy of the supposition that the medical department of an army does not require the use of any tactical principles or methods for the employment of its personnel, transport, and supplies in the field. This, he shows, is much more necessary now than in the past, for with modern arms, the

wounded are now scattered over very large areas and their collection steadily tends to become more difficult and must be intelligently directed by the administrative medical officer of the force, who is not only a technical adviser to the general officer commanding but also the commanding officer of the medical service.

The administrative medical officer must therefore invariably accompany the general officer commanding and must be kept fully informed of the military situation and plans. In order to direct the organization under his command he must be educated in map reading and thoroughly conversant with "medical tactics," which are necessarily consequent upon and subordinate to general military tactics. The failure to educate medical officers in peace for these duties which fall to them in war must inevitably result in the crippling of the action of the military commander, by the non-removal of wounded and sick from his army and in the infliction of unnecessary agony and death to large numbers of soldiers. Medical map problems, war games, staff rides, and manœuvres are all fully discussed and the necessity for the participation of medical officers in all these exercises is insisted upon. The book contains a large number of medical problems which are likely to be met with in the field, beginning with those connected with the management of the medical service of small forces in certain situations and going on to problems connected with the removal of wounded from large forces. Solutions are given to each, though it is made clear that the solution is no dogmatic one, but that other methods might have as good results. A study of these problems will be of great value to all medical officers.

The American general classification of battle casualties given is merely suggestive and is as follows:—

Killed	...	...	...	20	per cent.
Severely wounded, non-transportable				8	" "
Slightly wounded, able to march to advance base	...	...	...	12	" "
Wounded, able to walk to dressing station and Field Hospital	...			28	" "
Requiring transportation sitting up				20	" "
Requiring transportation recumbent				12	" "
				100	

This postulates for transport for 32 per cent up to the field hospitals and 60 per cent from the field hospitals towards the base.

Major Munson notes with regret that bands are too little considered as an auxiliary asset in battle and too seldom receive in peace regular training for their important duty as bearers in war. This is a matter which requires attention in other armies besides the American. He also emphasises the necessity for an administrative medical officer being appointed from an outside source, to a brigade acting independently, although no such officer is necessary in the organization of a brigade forming part of a larger force. The

administrative medical officer must be habitually with the staff of the brigade commander, so as to secure information and prepare medical plans, practicable in relation to the tactical situation.

The book ends with the following sentence :—"Instead of being, as some of the less well informed might affect to consider it, an incumbrance and liability which must be tolerated in the name of humanity, the sanitary service must be regarded not only as a powerful agency in the relief of suffering but as at all times a thoroughly practical and essentially valuable military asset to a commander."

**Hand-book on Military Sanitation for Regimental Officers.**

By Major K. B. Barnett, M.B., R.A.M.C., with an introduction by Lieutenant-General Sir Horace L. Smith-Dorrien: London, Forster Groom & Co., Ltd., 1912.

This is an elementary hand-book on military sanitation, beginning with an excellent introduction by Lieutenant-General Sir Horace Smith-Dorrien and ending with copies of certain question-papers set at examinations for promotion from Lieutenant to Captain, subject (I) Sanitation.

The book is sound and reliable, following well-known and approved lines.

It contains all the information on sanitation necessary for regimental officers, and it will be found very useful by such officers.

**Fire Problems.** By Major-General T. D. Pilcher, C.B. Allahabad: Pioneer Press.

With a view to filling up the gap which often occurs between the place where range-firing ends and tactics begin, Major-General Pilcher has from time to time set small "Fire Problems" to the troops under his command, and he now publishes these problems in the hope that they may be of use to a wider circle. It may be safely anticipated that the author's hope will be fully realised, for a perusal of the problems shows them to be full of instructional value and sound common sense. The effect to be obtained by a given number of rifles depends infinitely more on the fire-unit commander than on the individual range-classification of the men, and it is mainly for the training of the former that the problems are set. Like many other things, their solution seems easy enough, when you are shown the way to do it, but as the author points out, and as can easily be believed, many mistakes were made over them in practice, and will be made again, and not the least advantage in setting work of this kind is that it teaches the fire-unit commander to think. The book, which is of convenient size for the pocket, contains 25 problems in all, dealing with forces of all sizes, from an infantry brigade with guns to a piquet of two men, and we would confidently recommend it to the notice of commanding officers of cavalry and infantry as likely to prove most useful in the training of fire-unit commanders of all ranks.



**Sketch Map of Russo-Japanese War, with notes and references.** London : Forster Groom & Co. Price 2s. 6d.

Messrs. Forster Groom have added to their Whitehall Series of military maps the above-named map of Manchuria which will be found most useful by candidates for the Promotion Examination in October 1912. Bound in with the maps is an envelope full of coloured flags for marking the positions of troops, and also a booklet of notes on the period set for study in this examination, which will be found useful as an *aide-memoire*.

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**Catechism on the Field Engineering Manual.** By A. W. Sharpe (late R.E.). London : Forster Groom & Co., 1911. Price 4s.

The Manual of Field Engineering is so simply written and so easily understood, that it is difficult to see what object an officer can have in spending four shillings over the purchase of the book under review, which consists of 320 bulky pages of very small print while the Manual itself consists of only 121. The book has however reached a third edition, so evidently enjoys a certain amount of success, and it may be said in its favour that the man who finds it easier to study a subject by the method of question and answer will, if he lives long enough to work through the one thousand and sixty-seven questions therein set forth (and if he can remember the one thousand and sixty-seven undoubtedly excellent answers given in the text), have a comprehensive though probably parrot-like knowledge of Field Engineering at the end of that time. But for our part we would strongly recommend any such officer to get himself out of this method of learning as quickly as possible and stick to the official text-book (backed up, of course, by practical out-door experience whenever opportunity occurs), for no matter how long he took over the process, he would assuredly save time in the end.

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**The Military Law Examiner.** By Lieut.-Col. S. C. Pratt. Aldershot : Gale and Polden, August 1911. Price 4s. 6d.

The value of Colonel Pratt's book to students of Military Law is already so well known that it is only necessary to note that the latest (8th) edition has been revised and corrected up to July last, and is in every way a safe guide to the subject with which it deals.

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**Organization, Administration, and Equipment Made Easy.** By Lieut.-Col. S. T. Banning. Gale and Polden, 1911. Price 4s. 6d.

"Banning" is now a household word amongst officers of the army, and the number of candidates who have been assisted in their promotion examinations by his cleverly arranged book must already be more than legion. The present (11th) edition has been compiled with as much trouble as its predecessors, and though not devoid of mistakes, can be recommended to candidates for exami-

nation in this intricate subject, and also to all who wish to keep their knowledge of the organization of our Forces up to date. Some easily rectified errors should, however, be corrected in the next edition; for instance, the author has not yet discovered that there is a General Staff in India (though it has been in existence for two years) and he wrongly quotes the Army List of July 1911 in proof of his mistake.

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**Notes on Army Signalling.** Aldershot: Gale and Polden, 1911. Price 3*d*.

A 5th edition of this pamphlet has now been issued. It is in accordance with the latest Training Manual—Signalling, and is as handy a book of reference for signallers as were its predecessors.

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**Section and Company Drill Made Easy.** By "An Adjutant." Aldershot: Gale and Polden. Price 1*s*. 6*d*.

**Extended Order Drill, and the Company in Battle.** By the same author. Price 1*s*.

The above small books, based on the new Infantry Training, will be found useful for the instruction of junior N.-C. O.'s. They contain clear diagrams, and conclude with a list of questions and answers by which the reader can test the knowledge he has gained.

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**Hints for Soldiers Proceeding to India.** By L. F. Raper Gale and Polden. Price 3*d*.

The author of this pamphlet is to be congratulated on the production of a very sensible talk to young N.-C. O.'s and men on the subject of taking care of their health in this country. The book which consists of only 23 pages is written in simple language and is full of useful hints, and it would be well if every soldier could be in possession of a copy during his first voyage to the East.

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**Guide to Promotion for Officers in Subject (a) (i) (regimental duties).** By Major R. F. Legge. Gale and Polden, 1911. Price 4*s*.

Major Legge has brought this useful book up to date in accordance with official text-books, and has taken note of all alterations and amendments published in Army Orders, etc., up to August last. The information given is put up in a clear and readable form, and the book may be recommended to the notice of officers going up for subject (a) (i).

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**The Writing on the Wall.** By "Daniel." London: Hugh Rees. Price 1*s*.

The above book is a reprint of some vigorous articles on the European situation and the growing power of Germany, which appeared in one of the London dailies last year. The writer sets

himself to prove that the only way to maintain the balance of power in Europe is for England to be able to land at least six divisions in Belgium immediately war between France and Germany should break out, and thus to be on the flank of the practically certain German advance through Belgium to the north-eastern (weakest) part of France's frontier. The writer, however, asserts that our present striking force could never be got across the sea in time to be of any use, and that even if a part of it got there, they would, man for man, as at present composed, stand a poor chance against the German conscript, owing to the large number of reservists there would be in the ranks. He looks to compulsory service as the only means of making us strong against invasion at home, and of giving us a *voluntary* overseas force which would be a match for German troops. The latter is a point which has been much debated of late, and is open to considerable argument; but whether compulsory service would have the desired effect or not, the author rightly notices that no reforms can be expected till the temper of the English people is changed, and till they realise once more that sacrifice of individual interests is a duty to the State and not inconsistent with personal liberty. Though the book would carry more weight amongst soldiers if it were written in a lower key, its earnestness is undoubted, and it contains much that will repay perusal.

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**German for Military Students.** By F. G. Zimmerman, M.A.  
London: Hugh Rees.

Herr Zimmerman, who was at one time Professor of German at the Staff College, Camberley, and is now Instructor in that language at the Royal Military College, has written a book which should prove invaluable to officers studying German for the Staff College entrance or Interpreter's examination, as well as to those who wish to perfect their knowledge of military German in order to read German military works.

The book, which is arranged in a novel form, begins with a long introduction in which the author gives some valuable advice as to methods of study, and some excellent notes on the structure of the language. The body of the book consists of a series of military essays in German (history, organization, topography, etc.) with the literal translation opposite, while at the end of each essay several pages are devoted to a vocabulary of word groups, with short sentences explaining their various meanings, and a detailed explanation of various points of grammar, etc., which have been illustrated by the text. In the appendix are useful notes on grammar and on the formation of compound verbs. It will encourage many to learn that in Herr Zimmerman's opinion an educated man of average linguistic ability, working two hours a day, should acquire military German (*i.e.*, the language used in military life and literature, and consisting of a vocabulary of some 10,000 words) in six months.

The following books have also been received :—

*The (proffered) Influence of Mr. Childers on British Cavalry.*  
By Vindex.

*The Cancer Scourge and How to Destroy it.* By Robert Bell.  
*Multiple Telephony and Telegraphy by means of Electric*  
*Waves guided by Wires.* By G. O. Squier.

*La France Victorieuse dans la Guerre de Demain.* Par  
Colonel A. Boucher. (Paris : Berger-Levrault).



# UNITED SERVICE INSTITUTION OF INDIA

JULY, 1912.

## SECRETARY'S NOTES.

### I NEW MEMBERS.

The following members have joined the Institution during the months of March—  
June 1912 :—

Captain C. L. Magniac.  
Captain I. O'Grady Maunsell.  
Captain P. E. Knapp.  
Lieutenant C. R. Gover.  
Major H. H. Sproule.  
Major A. F. Stewart.  
Lieutenant O. M. Dyke.  
Captain E. C. W. Conway-Gordon.  
Lieut. H. C. Dobbs. (Life Member).  
Lieutenant A. M. Scovell.  
Captain P. Hudson.  
Major F. de B. Bell.  
I. D. Elliott, Esq., I.C.S.  
Captain G. A. Taylor.  
Sergeants' Mess, Landour Depôt (Subscriber).  
Captain P. W. N. Fraser, D.S.O.  
The Hon'ble Mr. H. Wheeler, C.I.E.  
Captain F. A. L. deGruchy.  
Lieut.-Col. A. P. Blenkinsop.  
Captain W. H. Jeffery.  
Lieutenant C. E. Colbeck.  
Mess Secretary, 47th Sikhs (Subscriber).  
Captain C. J. D. Freeth.  
Major B. A. Corbett.  
Major S. M. Rice.

Major F. M. Westropp.  
Captain C. O. C. Hunt.  
Major B. Vincent.  
Lieutenant A. T. Saulez.  
Major R. E. Tyler.  
Captain F. G. Marsh.  
Colonel G. McK. Franks.  
Captain L. C. Thuillier.  
Captain B. J. Haslam, R.E.  
Surgeon-General A. T. Sloggett, C.B.,  
C.M.G., K.H.S.  
Captain H. N. LeMarchant.  
Captain G. H. Smyth.  
Captain W. Deut.  
The Hon'ble Sir C. S. Bayley, K.C.S.I.  
(Life Member.)  
Captain A. B. Skinner.  
Captain A. H. McCulloch.  
Captain H. T. H. Harris.  
Bt.-Col. R. H. Firth, V.H.S., R.A.M.C.  
Major H. F. Cooke.  
Colonel H. Hendley, M.D., I.M.S.  
Major A. B. Lindsay.  
Captain C. F. Birney.  
Captain F. A. Nicolson.  
Captain R. C. Ross.  
Captain W. Macready (Life Member).

## II. GOLD MEDAL ESSAY COMPETITION, 1912-13.

The Council have selected the following as the subject for the Gold Medal Essay for 1912-13 :—

“Examine the application of the main principles laid down in Field Service Regulations I, Chapter VII (The Battle), to the conditions of a campaign in a terrain similar to that of Baluchistan and Afghanistan, against an army organized on modern principles.”

## III. PRESENTATION TO THE INSTITUTION.

Major G. F. MacMunn, D.S.O., has presented a framed engraving of the picture “The Hero and His Horse on the Field of Waterloo” to the Institution.

## IV. TACTICAL SCHEMES.

To assist officers studying tactics, tactical schemes are issued by the Council of the Institution, to members only, on the following terms :—

Rupees 5 per scheme, or Rs. 50 for a complete series of ten schemes, these charges including criticisms and solutions by a fully qualified officer selected by the Council.

Two sets of schemes (10 schemes in each series), revised to 1911, are now available, and an entirely new series (Series VI) is in process of preparation, of which six problems are ready for issue.

A number will be allotted to each member applying for papers, and solutions must be sent under these numbers to the Secretary, United Service Institution of India, Simla.

## V. MILITARY HISTORY PAPERS.

In order to assist candidates for the Staff Colleges, and other officers, in the study of military history, the Council of the Institution have decided, as a tentative measure, to issue, to members only, sets of questions on selected campaigns. The following papers are now available :—

- (a) Two sets of six questions each on Callwell's Small Wars.
- (b) Two sets of six questions each on the Strategy of the Russo-Japanese War.
- (c) Three sets of six questions each on the Battles of the Russo-Japanese War.
- (d) Two sets of six questions on the Afghan War, 1878—80.

The charge for these papers is Rs. 5 each, including criticism by fully qualified officers selected by the Council.

A number will be allotted to each member applying for papers, and solutions must be sent under these numbers to the Secretary, United Service Institution of India.

## VI. EXECUTIVE COMMITTEE, 1912-13.

At the annual meeting of the Council, held on 30th May 1912, the following members were elected to the Executive Committee for the ensuing year :—

Lieut.-General Sir P. H. Lake, Major-General F. J. Aylmer, Major-General W. S. Birdwood, Brig.-General A. Hamilton Gordon, Brig.-General J. Headlam, Colonel W. S. Hamilton, Colonel A. H. Bingley, and Major A. B. Lindsay. Captain C. F. Aspinall was re-appointed Secretary.

## VII. CHANGES IN THE REGULATIONS.

At the same meeting of the Council, it was unanimously decided that the following be added to the regulations of the Institution :—“ *Government Council*. The Chief of the General Staff shall be invited to become President of the Council.”

## VIII. MACGREGOR MEMORIAL MEDALS.

The Council of the Institution have made the following awards of MacGregor Memorial Medals for the year 1912 :—

To Captain B. E. A. Pritchard, 83rd W. L. I., a special gold medal for valuable exploration in the Naingvaw (Black Maru) country.

To Lieutenant A. T. Wilson, C.M.G., Political Department, Officer's silver medal for valuable reconnaissance work in Persia.

To Lance-Dafadar Mohibulla, Q. V. O. Corps of Guiles, Soldier's medal, and a gratuity of Rs. 100, for valuable reconnaissance and exploration.

## IX. U. S. I. LECTURES.

The following lectures will be given in Simla, under the auspices of the United Service Institution, during the ensuing season :—

1. The Blessings of War. By Lt-Col. G. de S. Barrow.
2. Aviation, with special reference to India. By Captain S. D. Massy. (Tuesday, 9th July. H. E. the Commander-in-Chief in the chair.)
3. Wather in War. By Major R. J. Blackham (3rd week in July).
4. The Inter-dependence of Strategy and Policy in War and during Peace. By Brig-General Braithwaite, C.B., Commandant, Staff College (4th week in July).
5. A Comparison between the French and German Armies. By Captain W. L. O. Twiss (4th week in July).

## X. REMITTANCES.

In consequence of the danger of sending currency notes through the post, members are particularly requested, when making remittances to the Secretary, to make them only by money-order or *crossed* cheque.

## XI. CHANGES OF ADDRESS.

Members are particularly requested to keep the Secretary informed of all changes of rank, title, and address.





# THE JOURNAL

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### THE USE OF GRAPHICS FOR ADMINISTRATIVE MEDICAL SERVICES ON STAFF TOURS AND IN THE FIELD.

BY COL. W. G. MACPHERSON, C.M.G.

One of the chief difficulties which an administrative medical officer has to face in taking part in a staff tour is to avoid confusion and keep pace with the narratives issued by the directing staff in such a way as to ensure a proper sequence in the tactical and strategical employment of his medical units. He must be able to give a clear account of the position of these units, the state in which they are, the amount of work which they have done and are still capable of doing, the movement of sick and wounded, and so on, at any hour of the day or night.

In the system of training the medical services in Austria tables are used to indicate the place of each medical unit and number of sick and wounded in it at a given hour each day ; but I have found the graphic method described by Troussaint in his recently published work on the administration of medical services in the field \* more useful as a method for maintaining a clear view of the situation at all hours of the day. I had an opportunity of testing this at a recent divisional staff tour of the headquarter staff of the 4th (Quetta) Division, and a description of its use may be of interest.

For dealing with the administrative medical work during an action, and with the collection of wounded from a field of battle, graphics entered on the map of the area were employed. This map may also be of interest to officers taking part in staff tours. The original idea of it will be found in the Medical and Sanitary Reports of the Russo-Japanese War. †

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\* "*La direction du service de santé en campagne*," by Medecin Principal de Ire Classe Troussaint, Paris, Charles Lavazelle : pp. 217, 218.

† Russo-Japanese War. Medical and Sanitary Reports from Officers attached to the Russian and Japanese Forces in the Field. (Official Publication.) Plate to face p. 236.






M. Troussaint's graphic is a ruled table arranged to show the position of different medical units at any hour of the day. Vertical columns are lined off to represent spaces for each hour of the day in such a manner that they also represent the distance which the medical units at its normal rate of movement would cover in an hour. In India, for example, where the medical units have camel and bullock transport, each hour space would represent also a distance of two miles, and the graphic for the day of 24 hours a distance of 48 miles, were it possible, that is to say, for the unit to move continuously. Horizontal columns are ruled off for each medical unit whose position and movements are to be recorded. The movement of a unit on a graphic table so ruled is simply recorded by drawing a black (or other coloured line), along the horizontal column for the unit, commencing at the hour of starting and ending at the hour of halting. A field ambulance, for example, is ordered to advance to a point ten miles distant from its present position, the advance to commence at 9 A.M. The administrative medical officer draws his line along the column as far as 2 P.M., knowing that the rate of movement is two miles an hour and that the ambulance will not have reached its destination till then. The place at which it is halted may then be entered at the end of the line, as well as any other event which it is desirable to record, such as the number of sick and wounded received by the ambulance then or during the remaining hours of the day. Temporary halts during a march are indicated by an interruption of the line at the hour of the halt and its continuation at the hour at which the march is resumed.

The vertical lines for the hours of sunset and sunrise may be double or made bolder if desired. It is convenient to do so, although I have omitted this in the graphics with this paper.


These graphics were prepared during the divisional staff tour to which reference has been made, and may serve as an illustration of the use of the method by an administrative medical officer in the field. They are modified in several respects to suit local circumstances and personal convenience, but the general principle is that of the graphic described by Troussaint.

For example, a series of conventional signs had to be devised. In this connection attention may be drawn to the necessity of definite conventional signs being adopted for the different medical units or lines of medical assistance in the field. The signs, which are used, were as follows:—


- — Regimental aid post.
- ⊕ — Bearer company (dressing station) of a field Ambulance.
- ⊞ — Field Ambulance.
- ⊕ — Clearing Hospital (or group of clearing hospitals on the general map).
- ⊞ — General Hospital (or group of general hospitals on the general map).


-  — Field Medical Store Depôt.
-  — Base Medical Store Depôt.
-  — Sanitary Section.
-  — Collecting Section, Ambulance column.
-  — Staging Section, Ambulance column.


It should be noted that these are all units of the Indian war establishments; but they could be adapted to represent equivalent units in the British establishments. As the field ambulances of the Indian establishments are divisible into four identical sections, each capable of being moved independently, the conventional sign for the field ambulance may be made to represent  $\frac{1}{4}$  or  $\frac{1}{2}$  or  $\frac{3}{4}$  field ambulance by splitting up the sign into  $\frac{1}{4}$ ,  $\frac{1}{2}$  or  $\frac{3}{4}$ , thus:—


 —  $\frac{3}{4}$  Field ambulance.


 —  $\frac{1}{2}$  Do. do.

 —  $\frac{1}{4}$  Do. do.

Also, in order to indicate whether a dressing station, field ambulance or other unit is open for work, the sign  is placed over its conventional sign, thus:—

 — A field Ambulance open.

 — Half field ambulance open.

 — A Bearer company with dressing station established.

Without this sign, the conventional sign of the unit means that the unit is waiting in reserve, closed ready to move, or not yet open after completing a march.

To return to the divisional staff tour which is being used to illustrate the use of the graphics, the narrative was briefly as follows: The division moved as an independent division from Chaman *via* the Gwazha Pass to Gulistan, where it concentrated on the 26th October, and formed the right of an army of three divisions and a cavalry division advancing against the enemy's defences. At Gulistan its lines of communication joined the army lines of communication at Kila Abdulla, about ten miles distant. On the afternoon of the 26th October a general advance was ordered, the objective of the division being the enemy's defences on the Mushlak range about 25 miles distant by way of Segi and Dinar Karez.

On the evening of the 26th the division bivouacked near the right bank of the Lora between Shuhdad and Segi. The river crossings were held by the enemy; and a night crossing was planned at an unguarded portion of the river some three miles down stream. The operation was carried out successfully on the morning of the 27th, casualties occurring only at the upper crossing held by the

enemy. The division re-assembled on the left bank and advanced during the day to within four or five miles of the enemy's defences, fighting the enemy's rear-guard as it advanced. On the 28th October the attack on the Mushlak defences was made, the main body of the division succeeding in occupying the north end of the range after suffering considerable losses. The enemy then retired from the Mushlak line of defences, and on the morning of the 29th October the staff tour terminated.

The graphics for each of these days were kept up from hour to hour during the tour and show the movements and position of the medical units from day to day, with the places where they halted or opened, the number of sick and wounded received, and the actual hours of movement and halt. Complete sequence is maintained, and it is possible to state at once the condition and locality of any unit at any hour of the day or night. By observing his graphic, the administrative medical officer was prevented from moving a unit from one place to another more rapidly than it could move in actual practice or from confusing the designation number and locality of his units. He was saved much calculation, and was able to steer clear of complications in the strategical and tactical handling of his units. Army lines of communication medical units, in touch with the division or mobilized with it, are also, for convenience, shown on the daily charts. Their movements and positions are recorded from information which, it was assumed, would be received from the director or deputy director of medical services from time to time.

The map showing the distribution of wounded after the attack on the enemy's defences on the third day of the tour indicates a convenient method of defining areas with a view to collecting the wounded into dressing stations and removing them to field ambulances. The casualties are distributed over the field in groups, and by drawing a line round each group, an estimate can be made readily of the medical units and ambulance transport required for each group. Further, according to the distance of the group from the field ambulance to which its wounded are to be removed, an estimate can be made of the time taken to clear the area with the ambulance transport assigned to it; or, *vice versa*, an estimate can be made of the ambulance transport which must be assigned to it in order to clear it in a given time. Taking each chart in detail in order to illustrate its use, one finds from the graphic of the 26th October that all the divisional medical units are shown as being at Gulistan at the commencement of the day. (It should be noted that the position of each unit immediately after mid-night is recorded from the information noted on the previous day's graphic in the case of the charts for the 27th, 28th and 29th October.) Only sections A and B of No. 20 British and No. 131 Indian field ambulances are shown as open for the reception of sick of the division. All the other units were closed and ready to advance. The advance took place in the evening, sections C and D

of No. 20 British and 131 Indian field ambulance moving with the advanced guard at 5-15 P.M., halting at Segi at 9 P.M. The remaining field ambulances of the division left with the main body at 7-15 P.M., and bivouacked near Shuhdad at 10 P.M., after marching about five miles. When the A. M. O. is asked at the conference at 9 P.M., to give an account of the position of the medical services, he has only to glance at his graphic for the day and read off his statement as follows:—"1/2 No. 20 British and 1/2 No. 131 Indian field ambulance have been left at Gulistan with 50 and 100 sick respectively. A collecting section of an ambulance column will probably clear these to a clearing hospital at Kila Abdulla to-morrow. The other two sections (C and D) of these ambulances should be arriving just now with the advanced guard at Segi. The remaining field ambulances are with the main body and should now be about three miles on the road from Gulistan to Segi. None of these ambulances are open, and any sick with the division at present are being looked after regimentally. As a matter of fact, all who were unable to march this afternoon were left with the sections of the field ambulances open at Gulistan."

Similarly the A. M. O. was able to read from his graphic any information which the general officer commanding required on the following day, 27th October. Thus, a conference was held on the field at 10 A.M., and the graphic up to that hour gave the following information:—"Sections A and B of No. 20 British and No. 131 Indian field ambulance opened at Segi during the night for reception of sick of the division and subsequently of the wounded, 25 sick, 110 of our own wounded and 50 of the enemy's wounded have now been received there. Sections C and D of the same ambulances were relieved by a clearing hospital at Gulistan at 7 A.M., this morning. They were ordered to advance to Segi and a message has just been received to say that they started at 9-30 A.M. The remaining field ambulances advanced from their bivouacs with the main body at 5 A.M. and halted at 7 A.M. on the left bank of the river, two miles west of the S. in Sirashahar on the 30' line of latitude ( $\frac{1}{4}$ " map). As there were no casualties in crossing the river, none of these ambulances were open. The bearer companies of No. 25 British and No. 132 Indian field ambulance have been ordered to accompany the leading brigade in the advance towards Dinar Karez, and should be continuing the march now. The main body of these ambulances and No. 133 Indian field ambulance will follow the main advance and are timed to move off at 11-30."

At 9 P.M., on the same day, the record on the chart reads thus:—"37 wounded came back on foot to the sections of the ambulances open at Segi; the sections, which had been relieved at Gulistan in the morning, reached Segi about 2-30 P.M., and after halting there, without opening for work, were ordered to move on to the 24th milestone on the Dinar Karez road and bivouac there. They continued their march at 6 P.M., and should consequently be approaching their bivouacs at 9 P.M. The bearer

companies of No. 25 British and No. 131 Indian field ambulance opened at or near Dinar Karez at 4 P.M. and received 65 and 135 wounded respectively; 20 of the former and 40 of the latter have been sent back on foot to Segi. The main body of these ambulances reached Segi at 5 P.M. They have opened there and taken over the wounded from their dressing stations which are now closed and prepared to move on. No. 133 Indian field ambulance has halted near Dinar Karez. Information has been received to the effect that the collecting section of the ambulance column will work between Gulistan and Segi, and that the field medical store depôt has been moved to Gulistan.\*

The graphic for 28th October and the map of the areas of casualties during the fighting on that day record and explain the tactical employment of the medical units during the attack on the enemy's defences. The chart gives the following record:—"The bearer companies of No. 25 British and No. 132 Indian field ambulance left Dinar Karez, at 3 A.M., with the brigade which moved to Havelock Hill during the night; halted from 4 to 5 A.M., and eventually opened under cover of the hill at 6 A.M. The main body of these ambulances remained open all day at Dinar Karez. The bearer company of No. 133 Indian field ambulance also was sent on during the night with the main body of the division to the Spinkula Hill. It moved off at 3-30 A.M., halted at 6 A.M., and eventually went to the Spinkula Pass and opened there between 8 and 9 A.M. The main body of this ambulance was sent to the same spot at noon and opened at 3 P.M., taking over a large number (560) of wounded during the afternoon. Sections C and D of No. 20 British and No. 131 Indian field ambulance left their bivouacs at 10 A.M. and were ordered to advance and open at the Spinkula Pass. They arrived there at 1 P.M., and received 150 and 180 wounded respectively. They then sent their bearer companies on to the north end of the Mushlak range, where dressing stations were established about 4 P.M. and 320 wounded collected into them during the evening. Sections A and B of these field ambulances at Segi were relieved by a clearing hospital from Gulistan at 4 P.M., and were ordered to advance to Spinkula. They arrived there before midnight, but did not open.†

"Information was received from the lines of communication that the field medical store depôt had been sent on to Segi and had arrived there at 9 A.M., also that the collecting section of the ambulance column would be sent to work between Dinar Karez and Segi."

The map of the areas of casualties shows how the administrative medical officer was able to face the problem of clearing the

\* Acting on this information the A. M. O. of the Division sent a message to the officer commanding at Gulistan to send on reserves of surgical dressing with the ambulance column to Segi.

† They would have brought with them the reserves of surgical dressings, which had been demanded from Gulistan on the previous day.

wounded from the field and have a portion of his medical units free to advance with the division during the operations of the 29th October. By the evening of the 28th October he had more or less accurate information regarding the distribution of the casualties and was thus able to map out the areas shown on the map. The distribution of wounded, as they were collected into regimental aid posts or groups by the regimental medical service, formed four general groups, which are mapped off by enclosing circles and numbered I, II, III, and IV.

In group I (the area occupied by the artillery and a covering battalion), there were few casualties, and the regimental aid posts and regimental arrangements were calculated to be capable of dealing with them and bringing the wounded back to the ambulances at Dinar Karez.

In group II, there are the casualties collected into aid posts on and in the vicinity of Havelock Hill, from which the feint attack on the enemy's position was delivered. It was calculated that there would have been no difficulty in removing the wounded from the aid posts to the dressing stations of No. 25 British and No. 132 Indian field ambulance established in this area. The cover was good and the regimental medical service and stretcher-bearers could do this, leaving the ambulance transport of the bearer companies to remove the wounded from the dressing stations to the ambulances at Dinar Karez. There were 40 dandies and 160 riding mules available, and the distance from the dressing stations to Dinar Karez was four miles. The number to be moved was 70 lying-down cases and 202 able to be carried riding; 88 slight cases able to walk found their own way back. The dandies and riding mules were consequently able to clear the dressing stations by nightfall in two journeys. The administrative medical officer had thus his mind at rest with regard to areas I and II.

The problem connected with the area marked III on the map was more difficult. It represents the area of casualties which occurred near the Spinkula Pass, when the troops advanced out of it into the open between Spinkula and the Mushlak range. Most of the casualties occurred here, and, as has already been explained, the field ambulances in reserve were all sent to this locality during the day. It was calculated that the ambulance transport of the  $\frac{1}{2}$  British and  $1\frac{1}{2}$  Indian field ambulances at Spinkula would not be able to do more than remove the wounded from the regimental aid posts to the west of the Spinkula Pass before night; and that only those able to walk could get back to Dinar Karez during the day. The majority of the wounded, therefore, in this area were collected into the field ambulances established west of the Spinkula Pass and remained in them during the night.

Group IV represents the area of casualties which occurred during the approach to and occupation of the north end of the Mushlak range. They occurred in the afternoon and evening of the 28th October, and it was calculated that nothing more could be done by



night than remove them to the dressing stations of sections C and D of No. 20 British and No. 131 Indian field ambulance which had been sent on to this area in the afternoon. By nightfall it was known that the enemy was withdrawing from the Mushlak range, and it was anticipated that evacuation by way of Kuchlak would be opened up next day. It was unnecessary, therefore, to consider removal of wounded from these dressing stations, as they would be relieved by the A and B sections of No. 20 British and No. 131 Indian field ambulances coming up to them and possibly by a collecting section of an ambulance column from Kuchlak.

As there was no narrative for the 29th October, when the staff tour terminated, beyond the fact that the enemy had retired from the Mushlak range and that the division was to assemble for operations against its second line of defences, the movements of the medical units were restricted to bringing up to the points of assembly as many of the field ambulances as could be cleared of the wounded received by them during the previous day. A graphic for the 29th October was accordingly prepared to show these details. It reads as follows:—"Sections A and B of No. 20 British and No. 131 Indian Field Ambulance had reached Spinkula from Segi by midnight of the 28th October. After halting there for about one hour they were moved on to the Mushlak range and bivouacked for the night, ready to accompany the division in its operations on the 29th October. Sections A and B of No. 25 British and No. 132 Indian field ambulances at Dinar Karez left their wounded in charge of sections C and D in the early morning and advanced to Gazaband Pass, arriving there between 9 and 10 A.M. ready to take part in subsequent operations. No. 133 Indian field ambulance and sections C and D of No. 20 British and No. 131 Indian field ambulance were still full of wounded at Spinkula, with the dressing stations of the last two working at the north end of the Mushlak range. Information was received to the effect that a clearing hospital had been moved to Kuchlak, and also to Dinar Karez, the latter arriving in the afternoon."

It will probably be found that the above remarks are sufficient to illustrate the use and reading of the accompanying graphics, and that very little study of them will be sufficient to enable administrative medical officers to understand how useful such methods are on staff tours and on field service.

But a point, which is also of some importance, is the fact that all the strategical and tactical movements noted may be brought about by a few simple messages and instructions. The administrative medical officer's action, in the matter of orders, messages, and instructions, is determined by the information he receives from the general officer commanding and the divisional staff officers on the one hand, and by the director of medical services of the army or his deputy director on the lines of communication on the other. It is his duty to keep both informed as to the state of the medical services within the division, and to transmit to the latter whatever demands

<i>Indian FA</i>	C D	GULISTAN	A.S No 109	BFA
<i>No 133 Indian FA</i>	A B C D	GULISTAN	A.S No 126	BFA
<i>Field Medical Store Depot</i>		KILA ABDULLA		
<i>Clearing Hospl</i>		KILA ABDULLA		
<i>X Ray Section</i>		CHAMAN		
<i>Ambulance Column</i>	⊕ ⊕ ⊕	KILA ABDULLA - GULLISTAN  CHAMAN-KILA ABDULLA		





[illegible]











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Indian FA	C	GULISTAN	AS No 126 BFA
	D		
No 133 Indian FA	A	GULISTAN	AS No 126 BFA
	B		
	C		
	D		
Field Medical Store Depot		KILA ABDULLA	
Clearing Hospl		KILA ABDULLA	
X Ray Section		CHAMAN	
Ambulance Column	⊕	KILA ABDULLA - GULISTAN	
	⊕	CHAMAN-KILA ABDULLA	





*Takes over Win Dressing Station*

Indian FA	B C D	SEGI	GULLISTAN	48	Relieved by Clearing	SEGI	24 M DINA
No 132 Indian FA	A B C D		SHUHDAD		45 No 25 BFA		DINAR KAREZ
No 133 Indian FA	A B C D		SHUHDAD		45 No 25 BFA		DINAR KAREZ
Field Medical							
Store Depot			KILA ABDULLA				GULLISTAN
Clearing Hosp			KILA ABDULLA		GULLISTAN	Takes over from A & B No 131 IFA	
XRay Section			CHAMAN				
Ambulance		Collecting Section	KILA ABDULLA	GULLISTAN			GULLISTAN SEGI
Column		Staging Section	CHAMAN - KILA ABDULLA				CHAMAN GULLISTAN





SPINNULA

Indian FA	D	DINAR KAREZ	W of SPINNULA Pass (180W)	SEGI	
	D	ROAD 24 MI			
	A	DINAR KAREZ	W of SPINNULA Pass (180W)		
	B				
No/32 Indian FA	C		W of HAVLOCK HILL (180W)		
	D	95W			
	A	ROAD			
	B	DINAR KAREZ	W of SPINNULA Pass		
No/33 Indian FA	C				
	D				
	A				
	B				
Field Medical Store Depot	C				
	D				
	A				
	B				
Clearing Hospl	C				
	D				
	A				
	B				
X Ray Section	C				
	D				
	A				
	B				
Ambulance Column	C				
	D				
	A				
	B				

SEGI Relieves A+B of BFA 1311FA

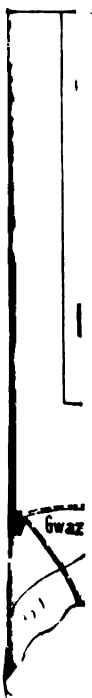
SEGI- DINAR KAREZ  
GUJISTAN- SEGI













# DISTRIBUTION OF CASUALTIES Positions and position of Divisional during the Action of 28th Oct.



## CONVENTIONAL SIGNS

- Field medical store depot
- Base medical store depot
- Sanitary section
- Collecting section, Ambulance column
- Staging section, Ambulance column

sign indicates that the unit is open for work

able into = 1/4 Field ambulance  
 = 1/2 " "  
 = 3/4 " "

ected into  
 own thus

Kuchlak



he may desire to make in accordance with the situations created from time to time or in anticipation of them.

Throughout the whole of the staff tour the number of orders, messages, and instructions emanating from the divisional administrative medical officer numbered 22 : they included various matters connected with supplies and sanitation as well as directions for the strategical and tactical employment of his medical units. In practice it will be found that innumerable messages, issued at intervals of a few minutes or a few hours even, while an action is going on, and entering into details of what an ambulance should or should not do, only interfere with the initiative of ambulance commanders, and, besides, are apt to contradict one another and lead to confusion.

In this staff tour, a demand was made for supply transport returning empty to re-fill at Segi, to be placed at the disposal of the medical services up to midnight on the 28th October, with a view to clearing as many as possible of the wounded in the ambulances at Spinkula. The transport, however, was camel transport without *kajawaks* for conveyance of serious cases, and although 400 camels were placed at the disposal of the administrative medical officer, it was found impossible to estimate the number of wounded who were capable of riding back on camels provided with pack saddles only. The idea of utilising this form of transport was consequently abandoned, more especially as the events of the day did not indicate great urgency in removing wounded from the ambulances at Spinkula. The wiser course was to leave them there until the ambulances could be relieved by clearing hospitals and ambulance columns coming up to the spot.

A general plan of the area of operations showing the position of the divisional medical units at the commencement of the staff tour and their connection with medical units on army lines of communications is added to the graphics and map of the area of casualties. It will enable the situations shown on these to be followed more easily.



## MARCHING TO THE SOUND OF THE GUNS.

BY CAPT. A. G. MCBURN, THE EAST SURREY REGIMENT.

If we examine and analyse the title of this essay we will find that it can be divided into three constituent parts. First, loyalty in its broadest sense; secondly, disinterestedness; and thirdly, the assumption of responsibility. All these qualities are vital in a commander, and there is many an instance in history where the lack of these attributes in a leader has brought about disaster. The Franco-Prussian War can show us some of the best examples of men endowed with these essential virtues.

One of our most distinguished officers, in a criticism of the Russo-Japanese conflict, points out, as a lesson from it to be taken to heart, the necessity for generals to be more disinterested and loyal to one another.

As long ago as 1870 this lesson had been well learnt by the Prussian army and the soldiers of the German States who fought with it. The good resultant from its practical application in the field cannot be shown to better advantage than in the battles of this campaign. Ungrudgingly and unhesitatingly the German commanders supported one another, sinking all personal aims for the common weal, gaining their reward in that series of successes which culminated at Sedan. That the Germans were specially fortunate in their generals, no one who reads the accounts of that struggle can for a moment doubt. The fear of responsibility, that bugbear of so many generals, was conspicuous by its absence; indeed most of the first battles fought in the war were begun without orders from headquarters and on the initiative of generals whose moral courage enabled them to act as they deemed best at critical periods and to take advantage of the opportunities which fortune sent their way. The battle of Woerth was even started against orders, the officer responsible for beginning it being convinced that he was acting for the best; and the Commander-in-Chief on arriving, having approved his subordinate's action, issued orders for the continuance of a battle which he originally had no intention of starting.

The battle began on the morning of the 6th August. The French and German armies were only separated by the valley of the Sauerbach and a collision of some sort was inevitable. The Prussian advanced guard commander sent forward two battalions supported by a battery to reconnoitre towards Woerth; the French advanced guard commander at the same time advanced towards Gunstett. This led to a series of disconnected fights which lasted till nearly noon. On the German right was the 2nd Bavarian Corps under von Hartmann. In the centre von Kirchbach's Corps, the 5th, while von Bose was bringing up the 11th Corps on the



left. All these corps became more or less engaged with the enemy. The last named had bivouacked for the night at Sulz, but hearing the guns at Woerth, had hurried up towards the firing and was drawn into the fight at Gunstett. The commanders had received orders not to bring on a battle, and the Bavarians retired. Von Kirchbach, however, believing it of the utmost importance that the French should not be given a chance of claiming a victory, was determined to continue the combat and begged von Bose, a great personal friend, and von Hartmann, to support him. The fighting had already been somewhat severe and the Germans had not had the best of it; a retreat at that moment was not to be thought of and von Kirchbach decided to accept the responsibility for the battle, the other two generals loyally supporting him. The Crown Prince's headquarters were at Sulz, and when in spite of his orders the firing grew heavier and heavier, he galloped off to Woerth. On his arrival there he saw that the troops were too far committed to think of a withdrawal and he determined to support the corps already engaged with the remainder of his army.

Although the orders of the commander-in-chief distinctly forbade an engagement, the resulting victory was so decisive that one can only admire the man who had the fortitude to dare to disobey them and who was therefore directly responsible for the success gained. On receiving his orders, von Kirchbach knew that a retirement would be looked on by the French as a repulse and a French victory at that period of the war would be a dangerous moral asset to the enemy.

On the same day was fought the battle of Spichenen, which had been "neither planned nor desired by the German commanders." The generals responsible for it were von Kameki and von Alvensleben, the former for beginning it, the latter for bringing it to a successful conclusion.

The intention of the Germans was to concentrate their three armies and get into line so as to be able to attack the French main body with the whole of their available forces. This idea was, however, frustrated by the action of their subordinate generals. So weak in fact was the army which attacked Frossard at Spichenen that only the lethargy of the French averted a serious disaster.

On the day of the battle von Kameki with the 14th Division was to have marched as far as Gnichenbach and thrown his outposts forward in the direction of the Saar and Saarbrücken. The cavalry, however, reported that Saarbrücken was unoccupied, that the French had retreated to the heights of Spichenen, and that they appeared to be preparing to retire still further. Hearing this von Kameki pushed on to Saarbrücken and determined to occupy the opposite heights with his outposts. Von Zastrow, the commander of the 7th Corps, who was following behind, approved of this and von François, commanding the advanced guard of the 14th Division, passed through the town and made for the opposite hills. Von Kameki imagined that he had in front of him only the rear

guard of the retreating French army and no serious fighting was apprehended. Only artillery was visible on the high ground above the town and the reports sent in by his cavalry confirmed his view of the situation. The 7th Corps was advancing behind him, and the 13th Division was also marching towards the river Saar; the result of his actions, therefore, caused him no anxiety.

The real situation, however, was very different and, after the attack had been launched on Spicheren, became well nigh desperate. The French 9th Division was entrenched on the Roteberg, on their left was Verge's division and Bataille's division was in reserve at Aetingen. Thus to start with there were three French divisions to the German one, the position too was strong and entrenched; already the odds were against them. To make matters worse, near Saargemund and only  $7\frac{1}{2}$  miles on the right of the French was Montaudon's division, while  $12\frac{1}{2}$  miles in rear was Bazaine's 3rd Corps. By all the rules of war the 14th Division was doomed, but the inexplicable immobility of the French troops posted close at hand within supporting distance enabled the shattered remnants to hang on till help arrived. Every German within sound of the guns marched at his best pace to the battlefield and had the French acted in like manner the battle of Spicheren might have had a different ending.

The first reinforcements to arrive were the men of the 3rd Corps, who were quite unexpected. They belonged to the 2nd Army, under Prince Frederic Charles, which was rapidly being concentrated on the left of the 1st Army. Von Alvensleben, commanding the 3rd Corps, was in advance; a keen-witted soldier, he was well aware of what was happening and was already moving his troops with all speed up the Saar. On arrival at Neunkirchen, hearing the sound of the guns, he pushed forward to Saarbrücken by rail and road with all possible despatch. He was thus able to bring up 14 battalions, 4 squadrons, and 6 batteries in time to take part in the fight, the men being flung into the battle as soon as they arrived, so immediate was the necessity for troops in the hard-pressed firing line. The 8th Corps also hurried forward, but only their advanced guard arrived in time to take part in the action.

The commanders of the 3rd, 7th and 8th Corps and von Kameki met on the battlefield and von Alvensleben assumed the chief command, the only troops then available being those of the 3rd Corps. As the batteries of the 8th Corps came up they were placed under the orders of von Buelow, commanding the artillery of the 3rd Corps. In fact von Alvensleben was supplied with every man, horse, and gun which arrived irrespective of division or corps, the divisional and corps commanders placing them all under his orders, thus enabling him to bring the hard-fought action to a successful conclusion.

So extraordinary does the behaviour of the French commanders appear that one could almost believe they regarded the issue of the struggle at Spicheren with indifference. At any time up to 3 o'clock

in the afternoon, when the first German supporting troops arrived, they could have placed an overwhelming force on the field and completely wiped out the 14th Division, but by their immobility and apathy they let the chance slip by and with it the victory which was theirs for the taking.

Before the war the superiority of the French Army to those of other European Powers had never been questioned. It had always been looked upon as the model of what an army should be. Its success in the Crimea, in Italy, China, and other places gave it unlimited self-confidence. That the Prussians would be destroyed within a few short weeks was undoubtedly the opinion of most French people and of many of the other European nations. A few men, such as Bismark, von Moltke and Prince Frederic Charles had gauged its true worth and were not afraid of pitting their own highly trained troops against those of France, but the majority of the Prussian soldiers, though longing to try their mettle, held their opponents in some respect. The battles of Woerth and Spicheren changed all this; the moral effect of these successes was tremendous and the German troops henceforward were confident of victory.

The battle of Colombey, the next action fought in the war, was begun by a divisional commander on his own responsibility, and had not been intended by the commander-in-chief. On 14th August, about 11 o'clock, reports were brought in to von Manteuffel, commanding the 1st Corps, that the enemy before Metz were retiring. To be ready for emergencies, and in case the movements should be a prelude to an attack, the alarm was sounded. Von der Goltz, who commanded the advanced guard of the 7th Corps, hearing this and seeing the French apparently retreating, decided to attack, and sent word of his intention to the 1st Corps: thus the battle began.

The French columns on hearing the sound of the guns turned about and hastened towards it. They greatly outnumbered the Germans, but were unable to shake off their attack and a bloody and indecisive combat raged from Colombey to Noilly, along which line three German divisions were extended. Up to 6 o'clock this unequal contest continued and then the Prussian reinforcements began to arrive. In this battle, as at Spicheren, the men were rushed into the fight as soon as they appeared.

There was no time to form a large reserve with which to make a decisive attack; help was urgently needed in the firing line and the supports were pushed up in dribblets and absorbed at once. However, they sufficed and the tide gradually began to turn, the French falling slowly back beneath the guns of Metz. Here, as in the battles immediately preceding it, the sound of firing acted as a magnet to the German troops; till late in the evening regiments continued to arrive, the last struggling in about 9 P.M. Although this battle had not been intended by the commander-in-chief, it accorded with the situation he had created and with his intention

of harassing and impeding the French armies. The success also added still further to the *moral* of his soldiers and detracted from that of the French.

On the night after this battle there was some doubt at the German headquarters as to the intentions of the French commander. It was thought probable that an attack would be made on the 1st Army by the combined French forces. The French needed a victory badly, and here was a chance of falling on the 1st Army and defeating it before help could arrive.

The 3rd and 9th Corps of the 2nd Army were therefore ordered to halt and close up in readiness for an attack should it be made as contemplated.

The general commanding the 3rd Corps was, however, certain in his own mind that Bazaine was retreating westwards, and on the early morning of the 15th his cavalry brought him information which confirmed this opinion. He knew that his orders to halt were due to the fact that the headquarter staff were in ignorance as to the exact position of affairs. The news he had gathered from his patrols was in his opinion sufficient to warrant an advance with his whole corps in order to get in touch with the escaping French army. He reported his decision to headquarters and made off by forced marches to the Moselle. He had marched rather more than 9 miles when an order reached him to halt and he was obliged to do so; he sent forward men and materials, however, to bridge the river which was then in flood. Shortly afterwards the retreat of the French became known to the headquarter staff and the 3rd Corps was allowed to resume its interrupted march. Von Alvensleben's orders were to make for the Metz-Verdun road at Mars-la-Tour by way of the Gorze road.

The general was convinced that to stop the French he would have to advance at his utmost speed. On his own responsibility, therefore, on the 16th he divided his corps into two columns, sending one *viâ* Gorze and the other by a difficult mountain road from Onville to Les Baraques, thus combining speed and a greater readiness for battle. If he could not throw his corps across their line of retreat, he was determined to delay Bazaine's troops by hanging on to their rear and so retarding them until the rest of the army arrived. The commander-in-chief had not contemplated a battle on the 16th, as the position of the headquarters of the two armies at Herry and Pont-à-Mousson shows, but the determination of von Alvensleben to close with the enemy before they should escape and the energy he displayed in carrying out his resolve were responsible for bringing on the fight which finally compelled the French to fall back on Metz.

In all these battles the German commanders relied on ultimate support from their own forces. They knew the positions of the troops nearest them and could so calculate approximately the time up to which they would have to fight unaided. The positions of the enemy were also known more or less and the fear that the supporting

troops would be drawn into side issues by being attacked by the French was therefore not present.

To chance a battle on the assumption that any of your own troops in the neighbourhood will come to your aid on hearing the sound of your guns is a dangerous practice unless the situation is so well defined and clear that the arrival of supports is a certainty. An instance from Gourko's operations south of the Balkans in the war of 1877 will illustrate this danger. Gourko was opposed by Suleyman who was south of him at Semenli with a much larger force than Gourko had any idea he possessed. A detachment of Turks was at Jenizagra some distance from Semenli and this force Gourko determined to attack and wipe out, thus leaving him free to deal with Suleyman. With this end in view he advanced in three columns. It so happened that Suleyman had, on the same day, come to a decision to attack Gourko and also marched off in three columns. The Russians were to have concentrated at Karlikioj, but only the left and centre columns arrived. Later on Gourko heard that his right column had been engaged with the Turks at Eskizagra and that the latter were now at Dzurani. Being unaware that he had to deal with Suleyman or that the Turks were in any force, he determined to make an attack on their position, relying on his right column to help him by co-operating as soon as they heard the sound of his guns. This nearly proved fatal, for the Russians on this flank were fighting desperately with Suleyman himself and were quite incapable of rendering any aid to Gourko, who was obliged to fall back, only extricating his force from its dangerous position with difficulty.

The fact that even the heaviest firing will not always be heard by troops who may be perhaps only a few miles distant from the actual battle, shows that sound is at best but an unreliable guide. Two curious instances of this are given in Maude's "Military Letters and Essays": the first is from the battle of Spicheren. The 13th Prussian Division was marching on the Saar when sounds of firing became audible from the direction of Saarbrücken. The line of march was at once changed and the troops set off towards it. The new route led through a big forest and after marching through this for some time the sounds suddenly ceased. The Prussian commander, thinking that it could only have been a skirmish, thereupon halted his men. At the same time, across the Saar, two French divisions were put in motion, they too having heard the guns at Spicheren. At 1 o'clock all sounds of firing ceased and the French generals marched their troops back to camp. The time at which the guns appeared to have ceased firing was the same in both instances, namely, 1 o'clock, and yet in reality the battle raged all day long without cessation. Just before 6 o'clock the sound again made itself heard and the Prussian troops getting under arms hurried to the battlefield arriving in time to take part in the fight. The French, less fortunate, when they again heard the guns, marched on towards Spicheren once more, but were too late to be of any use to their comrades who had already retreated from the field.

The second instance occurred at the battle of Gaine's Mill in the American Civil War. The Southern Army under Longstreet and Jackson attacked and defeated the right wing of the Northern army in full view of their left wing which was unable to take any part in the fight owing to an impassable river and swamp. Though only two miles separated the spectators from the actual battle, every incident of which could be clearly seen, not a sound reached them.

From this it would appear that a general who depends on the sound of his guns to bring him aid pins his faith on a somewhat untrustworthy factor, though the value of marching to the sounds of battle when the guns are heard is amply demonstrated in the successes won thereby in the Franco-Prussian War by the Germans. Nowadays the absence of all smoke and the extended formations which troops necessarily have to take up render the location of the actual combat rather more difficult than in the days of black powder. In some cases it might even be difficult to tell friend from foe as was actually the case in the action of Koedoesburg in the South African War. Babington with a cavalry brigade sent by Methuen to reinforce Macdonald was unable for some time to distinguish between Boers and British.

It may be taken, however, as a safe military axiom from the examples given us by the Germans that when in doubt one cannot do better than march to the sound of the guns. A commander from his knowledge of the general course of events should be able to appreciate the significance of sounds of battle from a certain direction and could decide as to whether his presence would be required or otherwise.



## THE ACHILLES HEEL OF THE EMPIRE.

BY MAJOR E. J. M. MOLYNEUX, D.S.O., 12TH CAVALRY.

It appears to me strange that while so much has been written upon the strategic dangers to which the Empire would be exposed in case of war with various Powers, the position of the most essentially vulnerable portion of it has attracted comparatively little attention from soldiers.\* This is strange for the reason that the portion referred to is not only extremely vulnerable and very weakly garrisoned, but is also, to England, of vital political and strategic importance apart from its economic value.

Much has been written, by soldiers and others, concerning the strategic position of the Indian Empire, Canada, South Africa, and Australasia in the event of war with any of the various Powers which would be in a position to threaten them: still more has been written with regard to the position of the British Isles in the event of war with a first class European Power. It is the object of this article to invite particular attention to the strategic problem offered by Egypt, because an attack upon that Protectorate seems inherently probable in certain contingencies, and its defence presents a problem of peculiar strategic difficulty and importance.

It is assumed, and rightly, that in the event of war with any Power, the Power in question would naturally prefer to bring the war to a rapid conclusion by striking straight at the heart of the Empire, and would do so, should such a course offer reasonable probability of success. Whether this be feasible or not, in view of our generally accepted maritime supremacy, is a point upon which very great differences of opinion exist: and it is not proposed to discuss that problem here. A Power at war with England, should the naval conflict upon which the possibility of a successful invasion of the British Isles must depend appear to offer no probability of success, would naturally look for some other point where pressure might be brought to bear. For this reason, it may safely be assumed that a war with Russia would involve an attack upon the Indian Empire, direct or indirect; and that a war with the United States would involve the invasion by land of Canada. It seems equally probable that in the event of war with the Central European Powers, they would attack the one point where they could get at us—Egypt, where their immense military preponderance could be brought to bear. The British Fleet might sail along the North Sea coasts and to the entrance to the Kiel Canal, with “Come out, you cad, and fight” for their motto. But that would not save Egypt.

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\* This paper was received from Major Molyneux in January last, before the recent articles on the subject in the columns of the *Times* had appeared.—Ed.





## MARCHING TO THE SOUND OF THE GUNS.

By CAPT. A. G. MCBURN, THE EAST SURREY REGIMENT.

If we examine and analyse the title of this essay we will find that it can be divided into three constituent parts. First, loyalty in its broadest sense; secondly, disinterestedness; and thirdly, the assumption of responsibility. All these qualities are vital in a commander, and there is many an instance in history where the lack of these attributes in a leader has brought about disaster. The Franco-Prussian War can show us some of the best examples of men endowed with these essential virtues.

One of our most distinguished officers, in a criticism of the Russo-Japanese conflict, points out, as a lesson from it to be taken to heart, the necessity for generals to be more disinterested and loyal to one another.

As long ago as 1870 this lesson had been well learnt by the Prussian army and the soldiers of the German States who fought with it. The good resultant from its practical application in the field cannot be shown to better advantage than in the battles of this campaign. Ungrudgingly and unhesitatingly the German commanders supported one another, sinking all personal aims for the common weal, gaining their reward in that series of successes which culminated at Sedan. That the Germans were specially fortunate in their generals, no one who reads the accounts of that struggle can for a moment doubt. The fear of responsibility, that bugbear of so many generals, was conspicuous by its absence; indeed most of the first battles fought in the war were begun without orders from headquarters and on the initiative of generals whose moral courage enabled them to act as they deemed best at critical periods and to take advantage of the opportunities which fortune sent their way. The battle of Woerth was even started against orders, the officer responsible for beginning it being convinced that he was acting for the best; and the Commander-in-Chief on arriving, having approved his subordinate's action, issued orders for the continuance of a battle which he originally had no intention of starting.

The battle began on the morning of the 6th August. The French and German armies were only separated by the valley of the Sauerbach and a collision of some sort was inevitable. The Prussian advanced guard commander sent forward two battalions supported by a battery to reconnoitre towards Woerth; the French advanced guard commander at the same time advanced towards Gunstett. This led to a series of disconnected fights which lasted till nearly noon. On the German right was the 2nd Bavarian Corps under von Hartmann. In the centre von Kirchbach's Corps, the 5th, while von Bose was bringing up the 11th Corps on the

left. All these corps became more or less engaged with the enemy. The last named had bivouacked for the night at Sulz, but hearing the guns at Woerth, had hurried up towards the firing and was drawn into the fight at Gunstett. The commanders had received orders to bring on a battle, and the Bavarians retired. Von Kameke, however, believing it of the utmost importance that the French should not be given a chance of claiming a victory, was determined to continue the combat and begged von Bismarck, a great personality and von Hartmann, to support him. The fighting had since been somewhat severe and the Germans had not had the best of it. At that moment was not to be thought of and von Kameke decided to accept the responsibility for the battle, the other generals loyally supporting him. The Crown Prince's headquarters were at Sulz, and when in spite of his orders the firing grew heavier and heavier, he galloped off to Woerth. On his arrival, he saw that the troops were too far committed to think of a withdrawal and he determined to support the corps already engaged with the remainder of his army.

Although the orders of the command-in-chief distinctly forbade an engagement, the resulting victory was so decisive that one can only admire the man who had the fortitude to dare to disobey them and who was therefore directly responsible for the success gained. On receiving his orders, von Kirchbach knew that a retirement would be looked on by the French as a repulse and a French victory at that period of the war would be a dangerous moral asset to the enemy.

On the same day was fought the battle of Spicheren which had been neither planned nor desired by the German command-in-chief. The generals responsible for it were von Kameke and von Alvensleben the former for beginning it, the latter for bringing it to a successful conclusion.

The intention of the Germans was to concentrate their three armies and get into line so as to be able to attack the French bravely with the whole of their available forces. This idea was however frustrated by the action of their subordinate generals. So serious a fact was the army which attacked Froeschel at Spicheren that the battery of the French heavy artillery used disaster.

On the day of the battle von Kameke, with the 14th Division was to have near to his far as to be able to throw his corps forward in the direction of the Saar and Saarbrücken. The enemy, however, reported that Saarbrücken was occupied and that the French had retreated to the banks of Spicheren, and that they intended to be fighting near Spicheren. Having received this information, von Kameke pushed on to Spicheren and fought the battle. The enemy's headquarters were at Metz. Von Zastrow, commandant of the 7th Corps, was fighting behind the French lines and von Frey, commandant of the 12th Division, the 14th Division, passed through the French lines and took them by surprise. Von Kameke imagined that he had been defeated by the French.

guard of the retreating French army and no serious fighting was apprehended. Only artillery was visible on the high ground above the town and the reports sent in by his cavalry confirmed his view of the situation. The 7th Corps was advancing behind him, and the 13th Division was also marching towards the river Saar; the result of his actions, therefore, caused him no anxiety.

The real situation, however, was very different and, after the attack had been launched on Spicheren, became well nigh desperate. The French 9th Division was entrenched on the Roteberg, on their left was Verge's division and Bataille's division was in reserve at Aetingen. Thus to start with there were three French divisions to the German one, the position too was strong and entrenched; already the odds were against them. To make matters worse, near Saargemund and only 7½ miles on the right of the French was Montaudon's division, while 12½ miles in rear was Bazaine's 3rd Corps. By all the rules of war the 14th Division was doomed, but the inexplicable immobility of the French troops posted close at hand within supporting distance enabled the shattered remnants to hang on till help arrived. Every German within sound of the guns marched at his best pace to the battlefield and had the French acted in like manner the battle of Spicheren might have had a different ending.

The first reinforcements to arrive were the men of the 3rd Corps, who were quite unexpected. They belonged to the 2nd Army, under Prince Frederic Charles, which was rapidly being concentrated on the left of the 1st Army. Von Alvensleben, commanding the 3rd Corps, was in advance: a keen-witted soldier, he was well aware of what was happening and was already moving his troops with all speed up the Saar. On arrival at Neunkirchen, hearing the sound of the guns, he pushed forward to Saarbrücken by rail and road with all possible despatch. He was thus able to bring up 14 battalions, 4 squadrons, and 6 batteries in time to take part in the fight, the men being flung into the battle as soon as they arrived, so immediate was the necessity for troops in the hard-pressed firing line. The 8th Corps also hurried forward, but only their advanced guard arrived in time to take part in the action.

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The general was convinced that to stop the French he would have to advance at his utmost speed. On his own responsibility, therefore, on the 16th he divided his corps into two columns, sending one *via* Gorze and the other by a difficult mountain road from Onville to Les Baraques, thus combining speed and a greater readiness for battle. If he could not throw his corps across their line of retreat, he was determined to delay Bazaine's troops by hanging on to their rear and so retarding them until the rest of the army arrived. The commander-in-chief had not contemplated a battle on the 16th, as the position of the headquarters of the two armies at Herry and Pont-à-Mousson shows, but the determination of von Alvensleben to close with the enemy before they should escape and the energy he displayed in carrying out his resolve were responsible for bringing on the fight which finally compelled the French to fall back on Metz.

In all these battles the German commanders relied on ultimate support from their own forces. They knew the positions of the troops nearest them and could so calculate approximately the time up to which they would have to fight unaided. The positions of the enemy were also known more or less and the fear that the supporting

troops would be drawn into side issues by being attacked by the French was therefore not present.

To chance a battle on the assumption that any of your troops in the neighbourhood will come to your aid on hearing the sound of your guns is a dangerous practice unless the situation is well defined and clear that the arrival of supports is a certainty. An instance from Gourko's operations south of the Balkans in the war of 1877 will illustrate this danger. Gourko was opposed by Suleyman who was south of him at Semeni with a much larger force than Gourko had any idea he possessed. A detachment of Turks was at Denizli at some distance from Semeni and the French Gourko determined to attack and wipe out, thus leaving himself to deal with Suleyman. With this end in view he advanced in three columns. It so happened that Suleyman had, on the same day, come to a decision to attack Gourko and also marched off in three columns. The Russians were to have concentrated at Karakul but only the left and centre columns arrived. Later on Gourko knew that his right column had been engaged with the Turks at Eskigaz and that the latter were now at Dzurand. Being unaware that he had to deal with Suleyman or that the Turks were in any force, he determined to make an attack on their position, relying on his right column to help him by co-operating as soon as they heard the sound of his guns. This nearly proved fatal for the Russians on this day were fighting desperately with Suleyman himself and were quite incapable of rendering any aid to Gourko who was obliged to take his only extracting his force from its dangerous position with difficulty.

The fact that even the heaviest firing will not always be heard by troops who may be perhaps only a few miles distant from the actual battle shows that sound is at best but an unreliable guide. Two curious instances of this are given in Mende's Military Lessons and Essays; the first is from the battle of Spicheren. The 1st Prussian Division was marching on the Saar when sounds of firing became audible from the direction of Saarbrücken. The division immediately changed and the troops set off towards it. They now marched through a big forest and after marching through it for some time the sounds suddenly ceased. The Prussian officers, considering that it could only have been a skirmish, they proceeded by men. At the same time, across the Saar, two French divisions were put in motion, they too having heard the guns at Spicheren. At Saarbrücken all sounds of firing ceased and the French generals marched their troops back to camp. The time at which the guns appeared to have ceased firing was the same in both instances, namely 10 o'clock and yet in reality the battle raged and raged with no cessation. Just before 10 o'clock the sound again manifested itself and the Prussian troops getting under arms then attacked, but did not arrive in time to take part in the fighting. The French troops too, when they again heard the guns marched back and Spicheren remained in French hands. They were not, however, much nearer the battle, having only retreated from the field.

The second instance occurred at the battle of Gaine's Mill in the American Civil War. The Southern Army under Longstreet and Jackson attacked and defeated the right wing of the Northern army in full view of their left wing which was unable to take any part in the fight owing to an impassable river and swamp. Though only two miles separated the spectators from the actual battle, every incident of which could be clearly seen, not a sound reached them.

From this it would appear that a general who depends on the sound of his guns to bring him aid pins his faith on a somewhat untrustworthy factor, though the value of marching to the sounds of battle when the guns are heard is amply demonstrated in the successes won thereby in the Franco-Prussian War by the Germans. Nowadays the absence of all smoke and the extended formations which troops necessarily have to take up render the location of the actual combat rather more difficult than in the days of black powder. In some cases it might even be difficult to tell friend from foe as was actually the case in the action of Koedoesburg in the South African War. Babington with a cavalry brigade sent by Methuen to reinforce Macdonald was unable for some time to distinguish between Boers and British.

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MOLYNEUX, D.S.O., 12TH CAVALRY.

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which very great differences of opinion exist: and it is not proposed  
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that a war with Russia would involve an attack upon the Indian  
Empire, direct or indirect; and that a war with the United States  
would involve the invasion by land of Canada. It seems equally  
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\* This paper was received from Major Molyneux in January last, before  
the recent articles on the subject in the columns of the *Times* had appeared. —  
Ed.



## THE ACHILLES HEEL OF THE EMPIRE.

BY MAJOR E. J. M. MOLYNEUX, D.S.O., 12TH CAVALRY.

It appears to me strange that while so much has been written upon the strategic dangers to which the Empire would be exposed in case of war with various Powers, the position of the most essentially vulnerable portion of it has attracted comparatively little attention from soldiers.\* This is strange for the reason that the portion referred to is not only extremely vulnerable and very weakly garrisoned, but is also, to England, of vital political and strategic importance apart from its economic value.

Much has been written, by soldiers and others, concerning the strategic position of the Indian Empire, Canada, South Africa, and Australasia in the event of war with any of the various Powers which would be in a position to threaten them: still more has been written with regard to the position of the British Isles in the event of war with a first class European Power. It is the object of this article to invite particular attention to the strategic problem offered by Egypt, because an attack upon that Protectorate seems inherently probable in certain contingencies, and its defence presents a problem of peculiar strategic difficulty and importance.

It is assumed, and rightly, that in the event of war with any Power, the Power in question would naturally prefer to bring the war to a rapid conclusion by striking straight at the heart of the Empire, and would do so, should such a course offer reasonable probability of success. Whether this be feasible or not, in view of our generally accepted maritime supremacy, is a point upon which very great differences of opinion exist: and it is not proposed to discuss that problem here. A Power at war with England, should the naval conflict upon which the possibility of a successful invasion of the British Isles must depend appear to offer no probability of success, would naturally look for some other point where pressure might be brought to bear. For this reason, it may safely be assumed that a war with Russia would involve an attack upon the Indian Empire, direct or indirect; and that a war with the United States would involve the invasion by land of Canada. It seems equally probable that in the event of war with the Central European Powers, they would attack the one point where they could get at us—Egypt, where their immense military preponderance could be brought to bear. The British Fleet might sail along the North Sea coasts and to the entrance to the Kiel Canal, with "Come out, you cad, and fight" for their motto. But that would not save Egypt.

\* This paper was received from Major Molyneux in January last, before the recent articles on the subject in the columns of the *Times* had appeared. — E4.

What would be the immediate consequences of the conquest of Egypt by a Power hostile to England?

On us, the effect would be instant and perhaps conclusive, unless we could immediately either neutralise its consequences or effect a reconquest. Our prestige as a world-power would be shattered just as completely as it would have been by the loss of South Africa. Our direct line to India, Australia, New Zealand and to the whole Farther East would be cut: our material loss in being deprived of the commercial value of Egypt would be the least serious effect.

For the conquering Power, the acquisition of Egypt would be a prize of the very first magnitude, bringing moral and material advantages of a very high order. It would be indeed an ideal "place in the sun," ready made, aboundingly prosperous, a granary, a market, and a magnificent "going concern." If, to Germany, barren South-West Africa and barbarous undeveloped Morocco have been worth such struggles, and if Italy has thought it worth while to embark in a long and costly contest against the determined hostility of the inhabitants, attended with the inevitable risks of complications with other powers, involved by the desire for what is at best only a narrow fertile strip of Tripoli: then how much more desirable is rich and solvent Egypt, immediately and not merely potentially valuable, after a quarter of a century of England's heavy spadework?

Would such an attempt, resolutely made with the vast resources of a great organized military combination, offer reasonable hope of success? Would it entail any irreparably disastrous consequences, if unsuccessful?

If we were at war with the Triplice, or with the two Northern Powers of that combination, this much may be taken as certain — that, until some overwhelming naval victory had relieved the British Isles of all anxiety on the score of either invasion or a serious interruption of our sea-borne food-supply, public opinion in England would not tolerate the detachment from home defence of a single trained soldier or a single capital warship. More than that: any real panic or apprehension at home would result in a clamour for the recall to the Channel Fleet of our weak Mediterranean squadron which it would take a strong Government to resist. Pending a victory comparable to that of Trafalgar or the Sea of Japan, no British Government would or could face the panic which would be caused by any deliberate diminution of our means of keeping an enemy out of England. And the most optimistic calculations give six months as the minimum time required to make the territorials fit for this purpose.

For transports, Trieste to Alexandria is four days' steam: from Bombay to Suez at least ten days.

To strengthen our naval position in home waters, the British Mediterranean Fleet has been reduced to a figure which places it, if unsupported, at a very serious disadvantage as compared with the

naval power of the Triplice in those waters: and it could hope for no accession of strength until some great victory at sea had made England secure against invasion. Over a century ago, with much further to go and no rapid and certain means of transport, and with a superior British fleet guarding the Mediterranean,\* Napoleon, with a strictly limited force, found the invasion of a strongly defended Egypt quite feasible. With the British Mediterranean Fleet reduced to half a dozen battleships, with a shorter sea route, with rapid and certain means of transportation, with only a microscopic force immediately available to oppose a landing, and with practically unlimited resources in men and material to follow, why should it be less possible to carry out such an invasion across the Mediterranean now? Only the other day, Italy, without any special effort, threw over 30,000 men into Tripoli within a week. The coast of Egypt is only a very few hours further on. What adequate defence could Egypt offer? We have, it is true, a great and famous English soldier at the head of affairs there. But even he cannot make bricks without straw: and, apart from the few native Egyptian battalions, which are not locked up in garrison duty in the Soudan or at important strategic points, he disposes of some four or five battalions of British infantry—a couple of which, at least, would be required for garrison duty at Cairo and elsewhere in case of grave popular excitement—one regiment of British and six squadrons of Egyptian cavalry, and two or three batteries of royal artillery. And the nearest point from which he could expect help would be the other side of the Indian ocean, whilst he endeavoured to stem an invasion in force with a couple of battalions of British and possibly half a dozen of Egyptian and Soudanese infantry, his regiment of British cavalry, supported by what could be spared of his six Egyptian squadrons, and perhaps a couple of batteries. Surely that Protectorate is run on “offchances.”

Could we count with any certainty on any extraneous support? From Russia? It hardly concerns her sufficiently to be worth a war. From France, trembling for the safety of her Eastern frontier if she allowed herself to become involved in the struggle? From Turkey? Turkey has no more acquiesced at heart in our occupation of Egypt than the Pope has in the loss of his temporal power. It is true that Turkish rule in Egypt was hopelessly bad, and that she was neither able to give a semblance of decent government nor to secure protection from outside aggression, even from the Mahdi. She derived little benefit from her nominal sovereignty over the wretched bankrupt country which England took from her control. But Turkey is none the less convinced that Egypt is hers by right; and we can hardly doubt that the prospect of the recovery of any portion of control over a rich and regenerated Egypt would be attractive to her, were such a prospect held out.

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\* It is to be remembered that Nelson was greatly hampered by having no frigates, or acouts, in his fleet—Ed.

This article does not propose to discuss the political situation or political questions at all, except in so far as they are inseparable from the strategic problem. It may, however, be pointed out that there is much in the political history of the Near East, during the past ten years, to support the view that definite action in regard to Egypt, in certain contingencies, has received very serious consideration from Powers to which we might find ourselves opposed. The further development of railway construction in Asia Minor, Palestine, and Syria will make the question even more acute. Even without such railways, danger to the northern land frontier of Egypt is not chimerical. It may be remembered that, half a dozen years back, when our relations with Turkey were not cordial, it was suddenly discovered that, unknown to us, some 15,000 Turkish troops had been concentrated within a couple of days' march north of Port Said. A battalion was wired for from Malta, and despatched within 24 hours. The incident blew over; but the garrison of Egypt was not increased appreciably. Given time, we might, under favourable circumstances, send 50,000 to 60,000 troops from India to Egypt, and follow them up later by further support from South Africa and Australasia. It is not quite always that India could send a considerable force. In 1897-98, for example, we had about 64,000 men either on field service or mobilized at the base. The tribesmen are better armed now, and rifles much cheaper on the frontier; we may require an even larger number of troops in the field for our next frontier campaign, and we have no guarantee that the Egyptian danger may not be presented to us at such a juncture.

The question is not unworthy of the attention of those interested in the strategical problems of the British Empire.

*January 1912.*

## THE TRAINING OF INFANTRY IN CO-OPERATION WITH ARTILLERY.

By MAJOR H. L. ANDERSON, 9th BHOPAL INFANTRY.

Our Field Service Regulations lay great stress on this subject, but the question arises do we use all the means at our disposal in carrying out the spirit of them? The object of this article is to suggest a method by which additional instruction might be carried out. Before intelligent co-operation can be undertaken, officers and section leaders must have some knowledge of the working of artillery, and it would appear that this knowledge can only be gained by their actually seeing the guns manœuvring and in action. It is conceded that at manœuvres and field days, officers, etc., have little chance of knowing very much about the fight except in their immediate vicinity, but before these operations take place much valuable instruction might be imparted. Infantry Training, 1911, lays down that a battery should work with a regiment during the last six days of battalion training, but this is seldom possible in India where the training season is so short and for various reasons.

The idea suggested is that where artillery and infantry are quartered together, instructional exercises be carried out by the brigadier as director or instructor, assisted by his staff, and conducted somewhat on the lines of a staff or regimental exercise, with this exception that the battery or batteries be actually present. The *raison d'être* of the exercise being that those under instruction actually see the guns at work. A scheme, either attack or defence, would be prepared and a rendezvous selected where the guns would come into action. All officers, British and Indian, and as many section leaders as possible in the garrison to be present. The director and his staff would explain the situation and introduce various phases of the fight and point out the position of the troops, etc. The battery commander would be present to give any explanation required as to the method of laying, reasons for direct or indirect fire, etc. Suitable ground would have to be selected where a bird's-eye view of the country could be obtained.

Telephonic communication might be practised and messages exchanged between the infantry and artillery positions. By this method I think very valuable instruction might be imparted, interest in artillery stimulated, and officers and others would gain a far greater insight into the meaning of co-operation, and the part that the artillery have to play than they do under present conditions.

Section commanders, too, would be able to impart to their men more valuable instruction than they can ever hope to do at present, as regards artillery.



Only a few selected officers can attend an artillery camp of exercise annually, and more general instruction throughout the service seems called for.

Schemes on these lines would, I think, greatly benefit officers who are preparing for examinations, whether for "Q" or promotion to major or captain. They would learn where guns ought to be placed, the frontage they occupy, etc., etc., and, what is most important of all, "practically" in the field. General officers too, no doubt, would gain a good deal of experience, especially those who have been out of touch with troops for some time.

Occasionally a company might be sent out with a battery when the latter is carrying out a tactical exercise by itself, and practice taking up positions to protect it, etc., etc. It is progressive instruction that is required in co-operation as well as in other things.

Knowledge is power, and power is co-operation in battle. Therefore unless our infantry has knowledge of artillery, co-operation and power must be lacking.

## AN OLD FRENCH MEMOIR ON INDIA, 1801.

TRANSLATED BY MAJOR G. R. HEARN, R.E.

### *Prefatory Note.*

(The following is a translation of a memoir on the actual importance of India, and the most efficacious means of re-establishing the French nation in its ancient splendour, which was written over a century ago, and published as an Appendix to the "Despatches of the Marquess Wellesley." The period was that between the war with Tippu and the Mahratta war, when Delhi formed part of what was described as a "French State," being the enormous *jagir* of M. Perron, the French General of Scindia's fine army, for the upkeep of which the revenues of the *jagir* were hypothecated. The memoir (or a copy of it) fell into the hands of the British and had a considerable influence in deciding the policy of advancing to Delhi, the brilliant accomplishment of which was due to General (afterwards Lord) Lake.

In spite of the lapse of time there is much of interest to-day in the memoir. If the translation does not do full justice to the magnificent language, it is because 20 years have elapsed since the translator studied French seriously.]

*Pondicherry, January 1801.*

"Before indicating the best means of attacking with success the English in their possession in India, it is necessary to explain their actual situation in this part of the world; their military state, their civil administration, and finally their association with the different peoples on the borders of their enormous frontiers. Every one is aware that Hindustan, since the dismemberment of the Moghul Empire, offers more than any other country a tableau of vicissitude, of thrones cast down, of princes assassinated, of usurpers assuming the sovereignty, and consequently presents to the view only a general medley of the various interests of each government lost to view in the revolutions which succeeded. Therefore there should be no surprise if the following details differ in many points from all that has been said and written about India before the conquest of Mysore and other provinces under Tippu's sway, a catastrophe which has anew entirely changed the aspect of affairs, but which, although augmenting by perhaps a third the wealth and power of the English, cannot but strengthen the necessity of re-establishing equilibrium in this once so flourishing empire.

"The domination of Great Britain, and the exclusive privilege of the Company to interior trade, extends from Cape Comorin, about the 10th degree of latitude, to the 29th, and from east to west for a distance of 800 English miles, not counting its possessions on the Gujarat and Malabar coasts, and the recent acquisitions of the vast estates of Tippu Sultan. The Company's domains in the Bengal Presidency may be divided into three almost equal parts. The first part is under cultivation; the second, abandoned by its inhabitants, is covered by forest, and the asylum of tigers, leopards, wolves, buffaloes, and elephants; the last third is lake, marsh, or estuary. It may be that the indigenous inhabitants number still about

12 to 15 millions ; the produce of their labour and industry in annual exports is valued at  $2\frac{1}{2}$  millions sterling. Imagine what an increase of population and of produce would follow cultivation anew of the abandoned portion !

“The Company’s possessions in the Madras Presidency on the Coromandel Coast, in Golconda and in Orissa, can be improved to a still greater extent, and consequently can furnish a still greater quantity of articles of trade. The Circars to the north of Mustaphanagar, Ellore, Rajahmandry and Chicacole, would in like manner become an abundant source of wealth under a judicious system of government ; the provinces adjoining Masulipatam ceded to Monsieur de Bussi in 1753 by Salabat Jung, and those near Condavir, which Monsieur Dupleix had by that date obtained from Mustapha Jung, would make the French masters of the greater part of the Coromandel and Orissa coasts, for an uninterrupted length of 200 leagues from Madapalli to the Jagernaut pagoda. These districts are bounded by a vast chain of mountains, running approximately parallel to the coast, and distant from it in some places 30 to 35 leagues, in others not more than 10. These mountains are covered with immense bamboo jungles, and in their whole extent there are not more than three or four passes, which (according to M. de Bussi himself) could be defended by a hundred against a whole army. The revenues of these four districts are estimated at the present time at Rs. 31,00,000. The English draw about this sum from it but if the taxes were re-adjusted, the produce could be augmented by nearly 100 per cent. It is evident that the French would find themselves masters of the greatest extent of territory possessed up to now by any European nation in Hindustan without excepting the Portuguese even at the zenith of their prosperity. Besides there would be advantages in trade to double the value of these important acquisitions, for the cottons suitable for export to Europe, which are made in this part of the Deccan, are of superior quality and cheaper than those of the Carnatic ; in the Rajahmandry district are considerable teak forests, and this is the only part of the Coromandel and Orissa coasts, which produces this wood in common use throughout India and of such value for naval construction ; the Chicacole district abounds in rice and other food-grains, and no doubt exports a large quantity annually. It is more important to appreciate the value of the Northern Circars than to regard them only as a national domain, to which we have incontestable rights, and which our enemies have torn from us as the spoil of the most disastrous war ever sustained by France.”

Here follows an account of the commercial system of the Company, and an attempt to show that it had drained Bengal of its wealth.

“It is certain that enormous sums have been carried away from Bengal, never to return again, and even greater sums than all the pillage of the English could amass. In 1738 Nadir Shah, known in Europe as Thamas Kuli Khan, carried off from Delhi in

coin as well as massive ornaments, vessels, ingots, etc., to a value of about 1,680 millions of livres tournois (£80,000,000 sterling). Cassim Ali Khan carried off in 1764 treasure from a quarter to a third of the silver then in circulation in Bengal and Bihar; the void occasioned by the ordinary exports of silver ingots in the ten years 1756—1766 was calculated at over 8 millions sterling; since this time the Company must have exported for its trade with China at least another 20 millions. The war with Haidar Ali, that with the Mahrattas, the two wars with Tippu Sultan, have cost over 6 millions sterling withdrawn from the currency of Bengal; for 30 years very little silver and no gold has been imported from Europe, and next to none from elsewhere; the trade with the Persian Gulf, whence at first a considerable quantity of metals was obtained, is practically at an end. These enormous withdrawals have—one may conclude—reduced the once inconceivable quantity of coin to a sum very much smaller than is generally supposed."

This the author of the memoir considers a further proof of the instability of the Company, and he proceeds to "give an idea of the base on which is founded the extraordinary edifice of the British power in Hindustan."

"Since the conclusion of the treaty of Benares in 1773 the Moghul Empire has been without a constitutional head, and the true sovereign has not been recognised in any particular state; indecision and uncertainty on this important point are sure to cause disturbances, which will not cease to menace the English Company with precipitate dissolution, and with a succession of quarrels more important than those which preceded the rise to prosperity of its government in this country.

"The English Company, as treasurer of the empire, collects the imperial revenue of the provinces of Bengal, Bihar, and Orissa under the privilege and authority of the Emperor, who has been forced to accord this favour by a succession of extraordinary events, on condition of a perpetual guarantee of the payment of an annual tribute of 25 lakhs of rupees for the Nawabship of Bengal; at the same time the Emperor was assured of the incontestable possession of Allahabad and Corah, provinces which were solemnly ceded and guaranteed to him in unalienable title for the maintenance of his imperial dignity. These were the conditions under which the Nawab of Bengal and the Company received their authority and privileges from the court at Delhi. It was the great founder of the British power in Hindustan, the famous Clive, who obtained these immense concessions from Shah Alam, then King of Delhi; they have transformed a company of intriguers into powerful sovereigns with a great establishment, both military and civil. By different treaties, concluded from time to time, all to the profit of the Company in new concessions, Shah Alam was confirmed in the sovereignty and possession of Corah and Allahabad; yet they violated the most sacred obligations in an outrageous manner, and have not held to the agreed conditions. Soon afterwards, the Nawabs of Bengal and Oudh

refused homage to the Emperor, and the Company not only stopped payment of the stipulated tribute, but it went so far as to sell the two provinces of Allahabad and Corah for 50 lakhs of rupees to Shuja-ud-daula, Nawab of Oudh, immediate vassal of the empire and one who had solemnly acceded to the concession and guarantees. These double political robberies were committed by Mr. Hastings at the commencement of his administration."

(The author omits to say that these provinces were ceded as the result of the battle of Buxar, and that Shah Alam accepted the protection of the Mahrattas in order to return to Delhi, whereupon Mr. Hastings ceased the payment meant to keep up the dignity of the so-called Emperor only while under the Company's protection. — Trans.)

"This was the sort of treatment received from a company of merchant adventurers by the Emperor of Hindustan, scion of the illustrious house of Timur, respected throughout the east, whose sovereignty is universally recognised although his power may have vanished, and from whom the very Company derived its constitutional power through his infinite bounty. It is evident that Shah Alam ought to be the incontestable sovereign of the Moghul Empire, being the great-grandson of Aurangzeb, tenth successor in the direct line from Tamerlane. This great question of the sovereign being decided, it remains to judge if it is not possible that the scions of this unfortunate family shall some day find protectors, who will cause their sacred rights to be respected, and will break their ignominious chains. What a day when a reciprocal alliance, and a wise union of powers shall assure the permanent sovereignty of the Emperor, and will make happy his direct and tributary subjects in the enjoyment of personal safety, and the wealth arising from peace, agriculture, and free trade!"

(One is tempted to ask whether the author forgot that the person of the King was at the time in the hands of M. Perron, a Frenchman, and that M. Drugeon only doled out to him a small proportion of the allotted stipend. — Trans.)

"The English Company by its ignominious treatment of the Great Moghul has forfeited its rights to the Diwani and Treasurership of the Empire; the Nawabs of Bengal and of Oudh are equally culpable of felony, being traitors to their lawful sovereign. Thus the Emperor of Delhi has a real and incontestable right to transmit to whomever he may choose the sovereignty of his dominions, and also the arrears due to him from the English; these arrears of the tribute of 26 lakhs of rupees promised by the Company, with interest of the country added, amount to-day to over 452 million livres tournois, a sum far exceeding the realisable property of the company."

(It will be noticed that the Emperor is not to retain his lawful property. — Trans.)

"The acts of tyranny and injustice committed by the English or in their name are too well known for it to be necessary to recall them here. Every one knows of the iniquitous condemnation and

cruel execution of Raja Nund Comar; the violent imprisonment of the Begums (the mother and wife of Shuja-ud-daula), and the arbitrary seizure of their treasure; the bloody outrage against the person, the finances, and property of Raja Chait Singh of Benares; finally, the other violences, infractions of treaties, usurpations, and so on, causing in the hearts of their victims sorrows too deep to be long contained. The cruel and unjust war against the Rohillas in favour of the Nawab of Oudh, the almost total destruction of this noble and warlike people, and the devastation of their rich country, can never be forgotten by the descendants of the unfortunate wretches, who, to the number of 500,000, had to flee to the shelter of those, whom formerly they considered their most cruel enemies, the Mahrattas."

The author opines that the Company's rule is by fear rather than by power, and that the courageous peoples of India will not allow matters to rest. He proceeds:—

"Although the greater part of the Indian nations were once tributary to the Moghul Emperors, and since then to the English, there are those, who have never been subjugated, and rule still; such are the Mahrattas, whom it has never been possible to reduce. They are governed by a council of Hindu Rajas, have never been enslaved, and indeed have often forced their neighbours to become tributary; the famous Aurangzeb had to pay them as annual tribute the fourth part of the revenue of the Deccan, called the Chouth. This they continued to receive until the ravages of Nadir Shah entirely crushed the Moghul Empire. To buy them off the Emperor permits them to receive the same from the province of Bengal. It is true that at this time the Moghul is no longer master of Bengal or of the Deccan; however, the Mahrattas endeavoured to establish their pretensions, and thus acquired a new right to the chouth. They sent to Bengal an army of 80,000 men, which defeated signally that of the usurping Nawab, Aliverdi Khan, and in 1747 he was obliged to buy peace by ceding to them Cuttack and agreeing to pay a chouth of 12 lakhs of rupees. Since that time the Company has taken possession of Bengal, as well as of the provinces of Bihar and Orissa, which were retained by the last Nawab; there has been much discussion on the subject of the chouth between the Company's servants and the Mahratta chiefs, the latter have always demanded the re-establishment of this tribute, to which they have an absolute right, as well as to the arrears, from the date of assumption by the Company of the sovereignty of Bengal.

"The Mahrattas have very extensive territories; their actual domains stretch from Central India to the frontiers of Tippu's territory, and to the province of Gujerat on the north, being separated from Persian territory by the river Padder, and from that of the Emperor by the Jumna. On the east they have the Carnatic and up to the borders of the Subadar of the Deccan, while ownership of the province of Cuttack takes their territory across the peninsula to the Gulf of Bengal. Their revenues are valued at over

252 million livres tournois. The labourers and artisans of this country often abandon their occupations to go to the wars; their education is solely military; and their armies are almost entirely composed of cavalry, long accustomed to military forays, in fact they are ever ready to leave their homes to ravage neighbouring countries, and subject them. They have always been formidable, but have been particularly so since their expedition against Aliverdi Khan; we have seen them ready to cross swords with Haidar Ali Khan, and test whether his troops were fit to meet theirs. They are now hard at work forming battalions of infantry, and have some already which yield nothing in discipline and bravery to any troops in India, even to those of European powers.

"It is evident that when the power of the Sultan of Mysore was crushed, there remained in India only two real powers, which could pretend to an influence in the political balance of this part of the world. These were the Mahrattas and the English, and foreseeing the natural course of events, Asia will before long witness a most important contest. If the English first cast down the gauntlet, the Mahrattas will not be slow to pick it up and accept the challenge. Even supposing that European discipline and valour counts as 10 to 1, the former will find plenty of foes, and the first success obtained against them by Asiatics will be a speedy precursor of their complete ruin."

The author harps again on the supposed oppression of its subjects by the Company, and considers that its power is not unassailable, proceeding:—

"But it would be folly to be blind to the difficulties attending an attack on the English in full force in their Indian possessions, and dangerous not to know what resistance they could oppose to invasion of their territory. It is certain that the Company has ready for defence of its vast domains the most formidable and best disciplined army that Asia has ever seen. It entertains in perpetual activity 160,000 men, half cavalry, half infantry, spread over the three Presidencies. This army is composed of European and Indian troops, which may be thus classified:—

20 European regiments of infantry averaging 800	..	16,000
6 cavalry regiments or dragoons at 600	...	3,600
4 regiments of artillery, half royal, half Company's,		
about	...	3,200
Europeans altogether	...	23,200

The Presidencies of Bengal and Madras have each 20 regiments of sepoys, each of two battalions of 1,200 men; in Bombay there are 10, so that there is a total of 50 regiments of 2,400 men or 120,000 sepoys, not counting 17 regiments of Indian cavalry in the three Presidencies, of 600 men each, making 10,200 cavalry. Thus the regular Indian troops amount to at least 130,000, but we have not included the battalions of artillery lascars, pioneers, pontooneers, etc., also the corps termed civil battalions, of which there are 8 or 10, half in the Circars, half in the districts taken from the

Dutch. The strength of these last corps is very undefined, increasing or diminishing according to the necessities of the moment.

Considerable though this army may be, it is evident that it cannot suffice to cover an area of more than 300 leagues in length by 260 in breadth, especially if one considers that it must furnish garrisons for the places taken from the Dutch. Ceylon demands three European regiments and two sepoy battalions, and the Malaccas must absorb at least two European regiments and two sepoy battalions. Moreover, the Poligars on the south Coromandel coast, and in the Circars continually keep busy over 10,000 men, who are occupied for six months in the year in a guerilla warfare, which is expensive without ending the depredations of this unconquerable caste of Hindus."

He proceeds to consider the means which France might take to invade India, and deal a mortal blow at England, stating that want of time, and a regard for his people, alone prevented Napoleon from proceeding to emulate the feats of Alexander.

"For some years knowledgeable persons have persisted in saying, and the masses in believing, that to march an army from Egypt to India is a fantastic enterprise, impossible of realisation. These assertions are based on so many captious arguments that it is not astonishing that most people, ignorant alike of geography and of history, are easily persuaded. If it be necessary to quote examples of the possibility of marching a great army across the sands of Arabia, without going so far back as the time of Alexander, one may refer to the comparatively modern expedition of Changis Khan, who in the 13th century overran Asia with an army of 160,000 men, and was only arrested by the Thracian Bosphorus. Another Tartar, Tamerlane, two centuries later, performed even greater feats, conquered from China to Europe, which trembled at his advent, and retraced his steps to lay the foundations of the Moghul Empire, which exists only in name since the invasion of Nadir Shah; he likewise crossed with a considerable force the enormous distance between Persia and Delhi, in many parts desert. The armies of these powerful warriors, be it noted, followed Oriental usage in burdening themselves with many useless mouths to feed, those of persons who in India follow the camp; again they maintained a large suite, imposing but useless, the more so that they placed obstacles in the way of manœuvring. On the other hand, an European army, undertaking such a long and tedious march, would only take absolutely necessary baggage, and would only gather companions in arms, recruited *en route*.

"The French, by making themselves masters of Egypt, and by maintaining themselves there in a state of defence, have already half completed their brilliant task, to fight with advantage against their natural enemies by taking them on the only flank presented to attack. It is reserved for the pick of the invincible troops of the Republic, the rightly denominated army of the East, to re-establish in India the honour of the French arms, and to realise the dreams



of Dupleix, those vast and noble projects for the aggrandisement of his nation--dreams dashed to the ground when that great man was stopped in the midst of his career and recalled to his native country, where a company of merchants, faithfully served by him for thirty years, left him to die in obscurity, almost in indigence.

"Without attempting to trace for the army of Egypt the route which it should follow, it is to the point to indicate how best it may endure the painful march through the desert, and enter with the least difficulty this fertile and well-cultivated land, which will not offer any resistance. Steps would be taken to profit by the absence of the English fleet from its station off the coast of Egypt from time to time to re-victual elsewhere, to seize the shipping in the port of Alexandria, and thus to transport 20,000 men to Alexandretta, the most northerly port on the Syrian coast. From there the army, still fresh, would move towards the east, and soon strike the Euphrates distant from Alexandretta only some 60 leagues. Once this celebrated river was passed, the plains of Diarbekr would be entered (once called Mesopotamia); thence, following the course of the Euphrates to the vicinity of ancient Babylon by a march of 150 leagues, the army would again march eastwards to Baghdad on the Tigris. This river separates Diarbekr from Persia, and Ispahan is no further from Baghdad than 130 leagues.

"This superb kingdom is sufficiently well known to make unnecessary a lengthy description of the fertility of the country, and its immense resources available for a victorious invading army. Besides, Persia, since the Sufis were dethroned by the usurper Thamas Kuli Khan, has been rent by civil war, and continually handed over to pillage by the various tyrants, who have rapidly succeeded each other on the changing scene. Therefore, far from anticipating the least opposition, we may expect to be everywhere aided by its wealth and produce in traversing this vast country. We shall find there many excellent horses (perhaps sufficient to mount the whole army), bullocks for the artillery, camels and elephants for transport. It would be easy also by meeting the wishes of the Persians, and not injuring their religious prejudices, to form from them some battalions of sepoys, who would be useful on the march, and be excellent for use in India, where the Persian people enjoy a great reputation for bravery.

"From Ispahan the army has to traverse Persia, and the eastern provinces dependant on that country for about 450 leagues to the frontier of Kabul, where the Moghul Empire begins; if the army makes allies of them, it can recruit from the warlike tribes of those parts to a considerable extent. The Sikhs, who possess the vast territory extending between Kabul and Lahore, could alone become very redoubtable foes to the English by reason of their militant and enthusiastic spirit; also by the force of their constitution and the dangers to which they are continually exposed—provided only that they be united under a single head. Warren Hastings tried to

persuade his council at Calcutta to send against the Sikhs the Company's troops in conjunction with the Mahrattas, who were then at war with them. To justify this unique project of aggression he went so far as to predict a great revolution in India if this martial people were allowed to mature without interruption. As if through fear of a nation becoming formidable some day, one has the right to exterminate them! What logic! After that there should be no difficulty in their determining to flock to our standards, destined to fight against those who conceived their destruction. From Kabul, capital of the province of that name, to Delhi is a distance of not more than 200 leagues, *vid* the beautiful country of Kashmir and Lahore, whose borders march with those of Hindustan proper.

"Thus the army of the East could by marching from Alexandria and avoiding the greater part of the desert reach the capital of the Moghul Empire by a route of about 850 leagues. If we take an average daily march of four leagues, in less than seven months from the date of departure from Egypt, the army ought to be in possession of Delhi. Any fleet sailing from Europe could not arrive in so short a time, and it would cost twice as much to transport a similar number of men. And will the sands of Arabia, or its burning climate, be any obstacle to men whom the Alps could not stop, and who were able to force a way through defiles till then impenetrable?

"It is from his Imperial Majesty that the French must derive their political influence in Hindustan; it is by re-establishing the illustrious house of Timur in its ancient rights, and by restoring it to its former splendour, that they may acquire a title to recognition by the Emperor Shah Alam; and when their title is supported by a formidable force, the effect will be calculated to ensure the well-being of that prince. It is in the Emperor's name that negotiations should be initiated and alliances formed; he alone can rally round his throne the majority of the princes of the empire, who have not long had only separate interests, because he had no troops to keep them to their duty, and because the English appearing in a moment of anarchy have without much trouble been able to stop the disorganized machine.

"There is no doubt that the Mahrattas, who have become the natural enemies of the English since the fall of the Sultan of Mysore, will embrace with gladness the project of a coalition the object of which is the crushing of a rival power marching with their frontier at many points, and which has for a secondary object the restoration of the dignity of the empire of which the Peshwa (for thus they term the head of the Mahrattas) has declared himself viceregent during the last invasion into Hindustan in 1784; in that year he made himself master of Delhi with a considerable army, and forced the Emperor to confide to his chief the regency over his state. The Imperial court must continue to be the mainspring of all the operations of the French army, until a final success makes it master of all India's coasts. Since that is the goal, it cannot too

soon prepare to meet its enemy sought out from such a distance. The vast extent of territory will prevent the English from massing their forces without weakening the majority of their fortresses, and they could not in any case oppose to us more than 30,000 men, of whom three-quarters would be sepoys, without reducing their garrisons; thus any sieges would be short and not difficult. This is why it is so necessary to occupy the coasts, so that they cannot look for help to other Presidencies.

"The French army then, increased by its alliances by a large corps of Mahrattas, and the best troops in India, could be formed into three divisions, of which the weakest would be kept in the Imperial city and its vicinity, so as to watch him, who would seem to direct its movements. The second division would be the strongest, and under the orders of the Commander-in-Chief would enter the English possessions by way of the vizierate of Oudh; it would then follow the Ganges and traverse the rich but defenceless province of Bihar. In Bengal it would no doubt meet with firm resistance, and considerable obstacles, but it would be the goal of a march of a thousand leagues; in this country renowned for its wealth is the rich capital of the English in Asia, a sufficient encouragement! Finally, the third division would march to the Malabar Coast, about an equal distance, through the Mahratta country, following one side of a triangle formed by Delhi, Calcutta, and Bombay.

"The premier Mahratta, and also the most useful by reason of the situation of his state, and his large force, would be Govind Rao Scindia, who has the territory of Gohud, Agra, and Jainagar, almost up to the gates of the capital of the empire. His interests are such that he may be counted on as an ally, especially if the vast projects of conquest are kept dark. Bombay and Goa are undoubtedly the two most essential points on the west coast of the Indian peninsula; if both cannot be attacked simultaneously, then Goa seems to present the greater advantages for several reasons. The importance of this conquest in time of peace would not be lessened by its facility of communication with the Red Sea, re-opening to the produce of India the old route of the Arabs and Venetians followed before the discovery of the Cape of Good Hope by Vasco de Gama."

The author proceeds to suggest an alliance with Spain with a view to seizing the Dutch colonies, then in English hands, by an army of the West; these colonies included Ceylon. He does not disguise that his projects are difficult, but all will be made smooth by the enterprising genius of the French nation. He concludes:—

"However vigorous be the efforts of England in her last agony, she cannot long escape the imminent danger which threatens her existence as a European power by menacing her Asiatic possessions. The pages of her history contain a prediction of the approaching catastrophe. Great conquests were in England always the prelude, the germ, of the most terrible revolutions; witness the history of

Edward III, one of her greatest kings, of Henry V, Richard II, Henry VI, and so on ; finally of George III himself, whose reign will be for ever memorable for the loss of the beautiful possessions of the Britannic monarchy.

“ If the fatal blow impending over this modern Carthage in Hindustan is not dealt now by France, before long it will surely come from a hand no less sure, probably more inflexible and relentless. The torch of civilisation, which has brought the light from the south to the north of Europe seems to have recently become steady on the icy banks of the Volga and the Dnieper ; Russia, that astonishing empire like a giant in its cradle, only known in the last century for the barbarous ignorance of its people, will soon join to that glory of arms, which has occupied her attention up to the present, the dalliance in luxury only to be found in an extended and flourishing trade. The numerous needs of this already redoubtable nation will make her feel the necessity for colonies, travel will contribute daily to the progress of geographical knowledge. The Russians will not be slow to perceive that there is no people better situated than themselves to enjoy the wealth of Hindustan, and to make themselves master of its trade. The sovereignty of the Czar extends to middle Asia, and by possession of the port of Astrakhan he is undoubtedly the master of the whole of the Caspian Sea ; thus his standard can without dispute advance to the borders of Samarkhand, the country whose capital was once the seat of Tamerlane's empire. The armies of that famous conqueror followed to Delhi a route well known, and one without an obstacle ; it is certain that it would be as easy for the cabinet at St. Petersburg to direct an army on India as against Italy.

“ The conclusion must be that the sovereignty usurped by England in Asia will be snatched from her. The French by their possession of Egypt will be able to anticipate the Russians, and to turn to advantage (not only of themselves but of the whole of Europe) this important conquest, by making vanish into thin air England's vain pretensions about command of the sea. If Russia be given time to extend her domination to India, it is to be feared that she will close the trade to other European powers. France, on the other hand, by her enterprising genius, can benefit all the nations, by restoring to the Moghul Empire its ancient lustre, by admitting to the ports all commercial flags. Finally by protecting Hindustan from all foreign invasion she will have the glory of ensuring the future weal of Asia, of maintaining her own policy, and of opening up to Europe those inexhaustible sources of opulence and prosperity.

“ An epoch worthy of occupying the first rank in the history of the nineteenth century ! ”

STANISLAS LEFEBRE,  
*Lieutenant of Infantry.*

soon prepare to meet its enemy soon!  
 The vast extent of territory will pre-  
 their forces without weakening th-  
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 why it is so necessary to  
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\* The French ar-  
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MEMOR OF INDIA, 1901.  
Henry T. Richard II.  
these reign will  
of the

## AVIATION.

ed at Mardan, Peshawar, and Nowshera in  
January 1912.

V. S. BLACKER, THE GUIDES.

use to describe some representative types  
the Blériot monoplane, was used by  
when he won the various big races of 1911,  
of Britain. In front of all is the propellor or  
eight feet in diameter. Immediately behind it is the  
Gnome engine which I shall describe later. The wings  
are on each side of the body, in rear of the engine; they are set at a  
slight angle from the horizontal called the angle of incidence; they  
are also tilted up outwards from the centre to the tips—the dihedral  
angle. The body, or fuselage, is a girder-like structure of ash,  
cross braced with wire. The elevator is a pivoted portion of the  
tail-plane, which is situated at the after end of the fuselage, and  
being moved by the vertical control pillar in the body enables the  
machine to fly upwards or downwards as desired. The rudder is like  
the rudder of a boat and is worked by a tiller under the pilot's feet.  
The tail-plane itself acts like the feathering of an arrow. Beneath  
the body is the landing chassis or under carriage, consisting of  
two bicycle wheels mounted like castors in a steel frame, which has  
shock-absorbing springs and indiarubber. The Blériot chassis is  
distinctive and very good, except that the machine steers badly on  
the ground. To protect the tail when landing, and to act as a brake,  
a wooden tail skid is provided. The pilot sits in the centre of the  
body with the circular top of the control pillar in his hands and his  
feet on the rudder bar. He has a good view to his front and  
downwards over the wings, between his feet, and to the sides in rear  
of the wings. The petrol and oil tanks are in the fabric-covered bow  
end of the body.

The Blériot type of machine is very speedy, and very portable,  
and the maker has just received an order for a hundred for the  
French army. The machines described above are single-seaters,  
but other patterns of Blériot (there are now 27 types) have carried  
up to eight passengers. The French are now going in for three men in  
each machine generally: one pilot, one observer, and one mechanician.  
I would add that Conneau flew the 1,000 odd miles round Britain  
in this machine without any breakage whatever, or the replacement  
of any part of the machine or engine.

The next type to describe is a biplane of the 1909, Farman,  
pattern. This has an elevator in front as well as in the tail; the

\* The diagrams with which this lecture was illustrated have not been repro-  
duced.

252 million livres tournois. The labourers and artisans of the country often abandon their occupations to go to the wars; their education is solely military; and their armies are almost entirely composed of cavalry, long accustomed to military forays, in fact they are ever ready to leave their homes to ravage neighbouring countries, and subject them. They have always been formidable, but have been particularly so since their expedition against Albert Khan; we have seen them ready to cross swords with Haidar Ali Khan, and test whether his troops were fit to meet theirs. They are now hard at work forming battalions of infantry, and have some already which yield nothing in discipline and bravery to any troops in India, even to those of European powers.

"It is evident that when the power of the Sultan of Mysore is crushed, there remained in India only two real powers, which could pretend to an influence in the political balance of this part of the world. These were the Mahrattas and the English, and following the natural course of events, Asia will before long witness a most important contest. If the English first cast down the gauntlet, the Mahrattas will not be slow to pick it up and accept the challenge. Even supposing that European discipline and valour counts as for all, the former will find plenty of foes, and the first success obtained against them by Asiatics will be a speedy precursor of their complete ruin."

The author harps again on the supposed oppression of the subjects by the Company, and considers that its power is not unassailable, proceeding:—

"But it would be folly to be blind to the difficulties attending an attack on the English in full force in their Indian possessions, and dangerous not to know what resistance they could oppose to invasion of their territory. It is certain that the Company has really for defence of its vast domains the most formidable and best disciplined army that Asia has ever seen. It entertains in perpetual action 160,000 men, half cavalry, half infantry, spread over the three Presidencies. This army is composed of European and Indian troops which may be thus classified:—

20 European regiments of infantry averaging 800	16,000
6 cavalry regiments or dragoons at 600	3,600
4 regiments of artillery, half royal, half Company's	3,200
about	3,200
Europeans altogether	26,000

The Presidencies of Bengal and Madras have each 20 regiments of sepoy each of two battalions of 1,200 men; in Bombay there are 10, so that there is a total of 50 regiments of 24,000 men or 120,000 sepoy, not counting 17 regiments of Indian cavalry in the three Presidencies of 1,000 men each, making 102,000 cavalry. Thus the regular Indian troops amount to at least 130,000, but we have not included the battalions of artillery, horse, pioneers, foot-miscellaneous, etc. also the corps termed civil battalions of which there are 8 or 10, half in the Circars, half in the districts taken from the

Dutch. The strength of these last corps is very undefined, increasing or diminishing according to the necessities of the moment.

Considerable though this army may be, it is evident that it cannot suffice to cover an area of more than 300 leagues in length by 260 in breadth, especially if one considers that it must furnish garrisons for the places taken from the Dutch. Ceylon demands three European regiments and two sepoy battalions, and the Malaccas must absorb at least two European regiments and two sepoy battalions. Moreover, the Poligars on the south Coromandel coast, and in the Circars continually keep busy over 10,000 men, who are occupied for six months in the year in a guerilla warfare, which is expensive without ending the depredations of this unconquerable caste of Hindus."

He proceeds to consider the means which France might take to invade India, and deal a mortal blow at England, stating that want of time, and a regard for his people, alone prevented Napoleon from proceeding to emulate the feats of Alexander.

"For some years knowledgeable persons have persisted in saying, and the masses in believing, that to march an army from Egypt to India is a fantastic enterprise, impossible of realisation. These assertions are based on so many captious arguments that it is not astonishing that most people, ignorant alike of geography and of history, are easily persuaded. If it be necessary to quote examples of the possibility of marching a great army across the sands of Arabia, without going so far back as the time of Alexander, one may refer to the comparatively modern expedition of Changis Khan, who in the 13th century overran Asia with an army of 100,000 men, and was only arrested by the Thracian Bosphorus. Another Tartar, Tamerlane, two centuries later, performed even greater feats, conquered from China to Europe, which trembled at his advent, and retraced his steps to lay the foundations of the Moghul Empire, which exists only in name since the invasion of Nadir Shah; he likewise crossed with a considerable force the enormous distance between Persia and Delhi, in many parts desert. The armies of these powerful warriors, be it noted, followed Oriental usage in burdening themselves with many useless mouths to feed, those of persons who in India follow the camp; again they maintained a large suite, imposing but useless, the more so that they placed obstacles in the way of manœuvring. On the other hand, an European army, undertaking such a long and tedious march, would only take absolutely necessary baggage, and would only gather companions in arms, recruited *en route*.

"The French, by making themselves masters of Egypt, and by maintaining themselves there in a state of defence, have already half completed their brilliant task, to fight with advantage against their natural enemies by taking them on the only flank presented to attack. It is reserved for the pick of the invincible troops of the Republic, the rightly denominated army of the East, to re-establish in India the honour of the French arms, and to realise the dreams



of Dupleix, those vast and noble projects for the aggrandisement of his nation--dreams dashed to the ground when that great man was stopped in the midst of his career and recalled to his native country, where a company of merchants, faithfully served by him for thirty years, left him to die in obscurity, almost in indigence.

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"This superb kingdom is sufficiently well known to make unnecessary a lengthy description of the fertility of the country and its immense resources available for a victorious invading army. Besides, Persia, since the Sults were dethroned by the usurper Thomas Kuli Khan, has been rent by civil war, and continually handed over to pillage by the various tyrants, who have rapidly succeeded each other on the changing scene. Therefore, far from anticipating the least opposition, we may expect to be everywhere aided by its wealth and produce in traversing this vast country. We shall find there many excellent horses (perhaps with which to mount the whole army), bullocks for the artillery, camels and elephants for transport. It would be easy also by meeting the wishes of the Persians, and not impairing their religious prejudices, to form from them some battalions of sepoy, who would be useful on the march, and be excellent for use in India, where the Persian people enjoy a great reputation for bravery.

"From Ispahan the army has to traverse Persia, and the eastern provinces dependent on that country for about 400 leagues to the frontier of Kabul, where the Mogul Empire begins; if the army makes a loss of them it can retreat from the warlike tribes of those parts to a considerable extent. The Sults, who possess the vast territory extending between Kabul and Lahore, and who have been very redoubtable to the English by reason of their military and enterprising spirit, as also by the fierceness of their constitution and the dangers to which they are continually exposed, provided only that they be united under a single leader. Warren Hastings tried to

persuade his council at Calcutta to send against the Sikhs the Company's troops in conjunction with the Mahrattas, who were then at war with them. To justify this unique project of aggression he went so far as to predict a great revolution in India if this martial people were allowed to mature without interruption. As if through fear of a nation becoming formidable some day, one has the right to exterminate them! What logic! After that there should be no difficulty in their determining to flock to our standards, destined to fight against those who conceived their destruction. From Kabul, capital of the province of that name, to Delhi is a distance of not more than 200 leagues, *vid* the beautiful country of Kashmir and Lahore, whose borders march with those of Hindustan proper.

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soon prepare to meet its enemy sought out from such a distance. The vast extent of territory will prevent the English from massing their forces without weakening the majority of their fortresses, and they could not in any case oppose to us more than 50,000 men of whom three-quarters would be sepoys, without reducing their garrisons; thus any sieges would be short and not difficult. This is why it is so necessary to occupy the coasts, so that they cannot ask for help to other Presidencies.

"The French army then, increased by its alliances by a large corps of Mahrattas, and the best troops in India, could be turned into three divisions, of which the weakest would be kept in the Imperial city and its vicinity, so as to watch him, who would seem to direct its movements. The second division would be the strongest, and under the orders of the Commander-in-Chief would enter the English possessions by way of the viceroyalty of Oude; it would then follow the Ganges and traverse the rich but defenceless province of Bihar. In Bengal it would no doubt meet with some resistance, and considerable obstacles, but it would be the gain of a march of a thousand leagues, in this country renowned for its wealth is the rich capital of the English in Asia, a sufficient encouragement. Finally, the third division would march to the Malabar Coast, about an equal distance, through the Mahratta country, following one side of a triangle formed by Deum, Calcutta and Bombay.

"The premier Mahratta, and also the most useful by reason of the situation of his state, and his large force, would be Gowardhar Sindhia, who has the territory of Gohud, Agra, and Jaunagar, and is up to the gates of the capital of the empire. His interests are such that he may be counted on as an ally, especially if the vast projects of conquest are kept dark. Bombay and Calcutta are undoubtedly the two most essential points on the west coast of the Indian peninsula; if both cannot be attacked simultaneously, the Goa seems to present the greater advantages for several reasons. The importance of this conquest, in time of peace, would not be lessened by its facility of communication with the Red Sea, respecting to the produce of India the old route of the Arabs and Venetians followed before the discovery of the Cape of Good Hope by Vasco de Gama."

The author proceeds to suggest an alliance with Spain with a view to seizing the Dutch colonies then in English hands, to an army of the West, these colonies included Ceylon. He draws a diagram that his projects are difficult but all will be made easier by the enterprising genius of the French nation. He concludes —

"However vigorous be the efforts of England in her last age, she cannot long escape the imminent danger which threatens her existence as a European power by making her Asiatic possessions. The pages of her history contain a prediction of the approaching catastrophe. Great empires were in England a ways the progeny, the germ, of the most terrible revolutions, witness the history of

Edward III, one of her greatest kings, of Henry V, Richard II, Henry VI, and so on ; finally of George III himself, whose reign will be for ever memorable for the loss of the beautiful possessions of the Britannic monarchy.

“ If the fatal blow impending over this modern Carthage in Hindustan is not dealt now by France, before long it will surely come from a hand no less sure, probably more inflexible and relentless. The torch of civilisation, which has brought the light from the south to the north of Europe seems to have recently become steady on the icy banks of the Volga and the Dnieper ; Russia, that astonishing empire like a giant in its cradle, only known in the last century for the barbarous ignorance of its people, will soon join to that glory of arms, which has occupied her attention up to the present, the dalliance in luxury only to be found in an extended and flourishing trade. The numerous needs of this already redoubtable nation will make her feel the necessity for colonies, travel will contribute daily to the progress of geographical knowledge. The Russians will not be slow to perceive that there is no people better situated than themselves to enjoy the wealth of Hindustan, and to make themselves master of its trade. The sovereignty of the Czar extends to middle Asia, and by possession of the port of Astrakhan he is undoubtedly the master of the whole of the Caspian Sea ; thus his standard can without dispute advance to the borders of Samarkhand, the country whose capital was once the seat of Tamerlane's empire. The armies of that famous conqueror followed to Delhi a route well known, and one without an obstacle ; it is certain that it would be as easy for the cabinet at St. Petersburg to direct an army on India as against Italy.

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STANISLAS LEFEBRE,  
*Lieutenant of Infantry.*



## AVIATION.

### A Lecture delivered at Mardan, Peshawar, and Nowshera in January 1912.

BY LIEUT. L. V. S. BLACKER, THE GUIDES.

To begin with, I propose to describe some representative types of aeroplane.\* The first, the Blériot monoplane, was used by Lieutenant de Conneau when he won the various big races of 1911, including the circuit of Britain. In front of all is the propellor or tractor, about eight feet in diameter. Immediately behind it is the 50 H.-P. Gnome engine which I shall describe later. The wings are on each side of the body, in rear of the engine; they are set at a slight angle from the horizontal called the angle of incidence; they are also tilted up outwards from the centre to the tips—the dihedral angle. The body, or fuselage, is a girder-like structure of ash, cross braced with wire. The elevator is a pivoted portion of the tail-plane, which is situated at the after end of the fuselage, and being moved by the vertical control pillar in the body enables the machine to fly upwards or downwards as desired. The rudder is like the rudder of a boat and is worked by a tiller under the pilot's feet. The tail-plane itself acts like the feathering of an arrow. Beneath the body is the landing chassis or under carriage, consisting of two bicycle wheels mounted like castors in a steel frame, which has shock-absorbing springs and indiarubber. The Blériot chassis is distinctive and very good, except that the machine steers badly on the ground. To protect the tail when landing, and to act as a brake, a wooden tail skid is provided. The pilot sits in the centre of the body with the circular top of the control pillar in his hands and his feet on the rudder bar. He has a good view to his front and downwards over the wings, between his feet, and to the sides in rear of the wings. The petrol and oil tanks are in the fabric-covered bow end of the body.

The Blériot type of machine is very speedy, and very portable, and the maker has just received an order for a hundred for the French army. The machines described above are single-seaters, but other patterns of Blériot (there are now 27 types) have carried up to eight passengers. The French are now going in for three men in each machine generally: one pilot, one observer, and one mechanician. I would add that Conneau flew the 1,000 odd miles round Britain in this machine without any breakage whatever, or the replacement of any part of the machine or engine.

The next type to describe is a biplane of the 1909, Farman, pattern. This has an elevator in front as well as in the tail; the

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\* The diagrams with which this lecture was illustrated have not been reproduced.



## AVIATION†.

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pilot and passengers sit in front of the engine and propellor, which are behind the main planes. The double rudders and elevators work like those in the Blériot, but the balancing of the machine is done by pulling the flaps at the ends of the wings up or down by wires which are connected to the control lever. In the Blériot the entire wings are twisted or bent up and down like a bird's wing by the movement of the control pillar, this is called warping. The eight aeroplanes of the British air battalion are of this pattern.

The next is a very remarkable machine made by the French firm of Breguet. This is not really a biplane, though it has two main planes; it is better called a double monoplane, since the engine, propellor, and fuselage are placed like those of a monoplane. This type is notable for its all steel build and absence of struts and wiring. This greatly lessens the wind resistance and makes for great efficiency. The Breguet holds the world's height record, 14,300 odd feet. It has also carried 13 passengers, another world's record. The War Office is buying one of these machines, and the French have a large number. One of them was flown from Casablanca to Fez during the Morocco troubles. The machine is a 3-seater and is made in various types of from 70 to 140 H.-P. The Breguet is a great weight-carrier and does about 60 miles per hour.

The Nieuport is a monoplane of somewhat different type to the Blériot. It is remarkably like a carrier-pigeon in shape, and holds the world's speed record (over 90 miles per hour).<sup>\*</sup> It is remarkably efficient, so much so that Comte de Nieuport, the inventor, who was unfortunately killed recently, was able to fly with only a 15 H.-P. engine. Now-a-days the Nieuport is fitted with engines of up to 140 H.-P. The 100 H.-P. type came out first in the French military trials last year which were very severe. The test for admission to the competition included nearly 100 miles out and a 100 miles home across country, landing to and rising from ploughed fields without assistance, and carrying three passengers, petrol, and oil for the trip, and 660 lbs. dead-weight.

The engine used on the majority of aeroplanes is the Gnome. This has seven cylinders set round one crank-case like the spokes of a wheel. The crank remains stationary and the cylinders revolve round it, carrying the propellor. The advantage of this is that the cylinders go so fast through the air that no water-cooling gear is necessary, thus saving much weight. The whole engine, moreover, acts like a large and very effective fly-wheel. Each cylinder head carries an exhaust valve and sparking plug; the inlet valves are in the pistons, the mixture being sucked into the crank-case through the hollow crank-shaft. The 50 H.-P. type weighs 160 pounds; 30, 70, 100 and 140 H.-P. are also made.

Other aeroplane engines are just light motor-car engines modified to suit. The engine Blériot flew the Channel with was merely a 25 H.-P. racing motor-bicycle engine.

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<sup>\*</sup> Note.—Védrines, on a Deperdussin, put this record up to 105 M.P.H. in February, since this lecture was written.

As many people still think that aeroplanes are merely a dangerous form of scientific toy, capable of flying prettily on fairly calm days, I have compiled a list of a few performances by modern machines.

**Capabilities.**

Speed ... 105 M.P.H. without wind, normal conditions.

Distance ... in one day 781 kilometres.

Duration ... 14 hours 35 minutes.

Height ... 14,780 feet.

Passengers ... 13.

Climbing ... 3,500 feet in 5' 30".

Run ... 40 yards (to rise from plough).

These figures speak for themselves, though remarkable feats in 1911 will be every-day doings in 1912. Furthermore, an aeroplane can alight on a 75-yard strip of level ground. Even ploughed field is quite good enough. Flying in a thirty-mile an hour wind is now quite an ordinary event at home, but of course only a skilled pilot on a good machine can do this. The wind in the Peshawar Valley does not go up to 30 miles per hour on two days a year.

Aeroplanes can bivouac out in the open indefinitely with merely a waterproof sheet over the engine. Many people ask "Can an aeroplane hover?" No; it cannot stay still in the air unless it is going into a wind blowing at the same velocity as the speed of the machine. Still, objects on the ground are perfectly easy to observe, as they appear stationary, just as objects a little way off do from a railway carriage window. For lengthy observations one can circle over the enemy. In fact nothing can hide from an aeroplane; the more an enemy digs himself in the more conspicuous he becomes from on top. It must be remembered that the ordinary flying height on manœuvres and on service is between 1,500 and 2,000 feet, that is, 500 to 700 yards. Of course, at these distances men are easily visible, let alone cavalry and guns. At the same time, an aeroplane at this height going from 50 to 80 miles per hour is quite secure from being hit by present-day artillery. Gunners themselves have acknowledged this at last: I refer to an article by Major Hawkins in the R. A. Journal for October. If any gunner thinks he could hit an aeroplane, I would suggest his taking an 18-pounder out after the snipe in Mathra Jheel, just to get his eye in. They are a bigger target and don't go so fast.

The idea of disabling an aeroplane by musketry fire is not very practical. It is true that in Tripoli an aviator was wounded, but owing to his engine failing he had descended to within 200 feet of the enemy. He, however, got home safely. It would be necessary to hit either the pilot or propellor to produce any effect. Moreover, rifles are not sighted to shoot upwards, the range cannot be estimated within hundreds of feet, the speed is unknown, and all bullets fired upwards come down just as hard as they go up. In fact, an aeroplane is practically invulnerable to anything except another and faster aeroplane. A fast machine can destroy a slow one by manœuvring so as to get above it and then crossing its path in a downward

direction about 50 or 100 yards in front. This causes the propellor blast of the fast machine, a gust of air going at perhaps 100 or 120 miles an hour, to strike the slower one, and it will certainly capsizes it.

This is of course the way in which the aeroplanes of one army will obtain the "command of the air" from the enemy with slower machines. In a recent lecture in London by Captain Burke (Royal Irish) probably the most experienced flyer in the army, a certain officer unacquainted with aeroplanes saw fit to cast doubts on this method, so I may explain that this is not a theory or a prophecy, but a common incident that most aviators have had experience of. I myself have been crossed about 400 yards in front by another machine, and if the distance had been 100 instead of 400 yards, nothing could have prevented a smash, so great was the air disturbance.

It is therefore obvious that a country which means to take war seriously, must ensure having more aeroplanes than the enemy, and faster ones. Otherwise, the day after the declaration of war will see the wiping out of the slow aeroplanes and their pilots, and the "command of the air" for the enemy, carrying with it the most minute knowledge of his opponent's entire dispositions and movements and laying open all important points, such as the headquarters of general officers, artillery commanders, ammunition columns, ordnance and supply depôts, railway bridges on lines of communication, and even the camps and bivouacs of the infantry open to damage or destruction from high explosive shells dropped by the enemy. There is an idea current that aeroplanes cannot drop bombs or shells with effect. This is somewhat incorrect. An aeroplane can hit with accuracy a small target using as many shells as it can lift. As a modern French military aeroplane can lift 660 pounds dead-weight, it follows that it can drop 6 six-inch Lyddite shells, either together or separately. I say "with accuracy" because the range is known to the aviator, who reads it off from his aneroid barometer, also the speed of his machine, which does not vary; so that all he has to do is to steer his machine over the target, and when the sights which are fitted to bomb-dropping machines come on, drop the shell, which cannot miss by much. Of course the sight must be set to the height shown on the aneroid. From actual experience I think one could drop 5 inch or 6 inch Lyddite shells into a 20-yard circle nine times out of ten, from ordinary heights. The release of the weight makes no difference to the aeroplane nor does the explosion of the shell when it hits the ground. The variability of the wind is the only serious cause of inaccuracy. The firm of Carl Zeiss, of Jena, is bringing out a bomb-dropping sight for aerial use.

For the price of the equipment of a battery, one can buy 80 or 100 first class aeroplanes, capable of carrying 480 six-inch Lyddite shells between them and hitting with accuracy and despatch any target within a range of, say, one or two hundred miles. Moreover,

the aeroplanes will be invaluable for the reconnaissance as well. In spite of the sensational features of bomb-dropping, the field of

**Strategical reconnaissance.**

action in which the aeroplane is unrivalled and supreme, is strategical reconnaissance. Compared with patrols mounted on horses, aeroplanes are eight or ten times as fast and go ten to twenty times as far. They take up no road space whatever, demand a very small personnel; they can be replaced or reinforced without troubling the lines of communication; they need very little in the way of supplies, which they can obtain themselves from railhead; they consume nothing except on working days, and best of all they can see anything and everything of the enemy, provided only that they have "command of the air." It is still an open question as to whether single-man machines are the best or whether crews of two or three or more men are necessary. As speed is so essential to overcome the enemy, I am in favour of a large number of very fast single-seaters, more especially as a really practised pilot can fly in almost any weather if his machine is only fast enough. A proportion of 3 and 5 seaters is necessary for other purposes.

Tactical reconnaissance affords a fine scope for the aeroplane;

**Tactical reconnaissance.**

of course lines of infantry are not very conspicuous, but batteries, staffs, trenches and cavalry cannot escape observation.

During an action, of course, a pilot must take the weather as he finds it, whereas, while on a strategical mission when armies are still several days' march apart, it does not matter whether he chooses the early morning or the evening to get to his objective.

Bomb-dropping I have already touched on. It will be readily

**Offensive action.**

seen that batteries and other objects conspicuous from above will have to go away and hide, if a few dozen hostile aeroplanes are let loose among camp at them. The moral effect of a few hand-grenades dropped into a night would be considerable.

Musketry fire from aeroplanes might be necessary for defence against hostile air-craft.

It is quite within the bounds of probability that troops may be carried in aeroplanes after the fashion of glorified mounted infantry to hold important positions and the like.

Inter-communication by means of aeroplanes offers very many advantages: not only can written messages be carried with great speed, but staff officers can be taken from, say, the G. O. C. Division, to explain the situation to a brigadier.

In the same way, it will often be of the utmost advantage to a commander to get into an aeroplane and carry out his personal reconnaissance from it instead of from the motor-cars mentioned in F. S. R., Part I, para. 93.

Ammunition can be carried to isolated positions.

Observation of artillery fire has been carried out with great success by the Italians in Tripoli, and has very obvious points in its

favour. All the same, it would be much simpler to increase the number of aeroplanes and use them for getting the shells on to the enemy, instead of firing them out of guns.

Against raiders in the North-West Frontier Province, the value of a few good aeroplanes is obvious. The difficulty of following the line of retreat of a gang must be reduced when it can be done from overhead. A supply of hand-grenades will be very useful for "bolting" them out of masjids and other strong places which such bands occupied in the raids at Bannu and Ternab last year. Moreover, the weather usually experienced in the Peshawar Valley and the nature of the ground, for instance, near Abazai and round Mardan, Shahbaz Garhi, and Peshawar itself, make this valley an ideal place for officers to get their first experience in practical cross country flying.

I must add that airships, that is dirigible balloons, are now not of much value in civilised warfare except possibly at night. The slowest aeroplane can catch a dirigible and destroy it by dropping any old thing on to it; however, for frontier warfare, good and handy little dirigibles would be very useful, as they could go in among the higher hills where the wind might be too gusty for aeroplanes, if only transport were available to carry their gas, or if they were based on permanent forts or posts.

Aeroplanes are no longer an interesting accessory to a modern army; they are an important integral part of it. Nor must aeroplanes be thought of singly; a hundred machines are a reasonable unit for calculations. After all, a hundred aeroplanes do not cost as much as a battery either initially or for upkeep. It is quite unfair to have one or two aeroplanes on manœuvres for trial, and to form one's opinion from them. If an aeroplane by itself gets smashed, on-lookers get a poor opinion of their general utility. On service hundreds of machines must be used and scores will be smashed. The idea of repairing a bad smash on service is futile (even in countries where motors can be used); the machine must be abandoned, the crew taken back in another machine, and a new aeroplane flown up from railhead.

Small smashes, of course, can be repaired by the crew, with the tools and spares carried on board. Similarly, aeroplanes must obtain petrol and oil direct from an advanced dépôt formed at railhead. Even if this is as much as fifty miles behind the commander-in-chief, it is not far for machines to go to fill up. Dépôts could be formed even in advance of the army by the aeroplanes themselves, in places inaccessible by nature and quite possibly strengthened by landing parties. It must always be remembered that really good military machines carry three passengers, petrol and oil for 200 miles, 600 pounds dead-weight besides, and fly seventy miles an hour in marching order.

It stands to reason that an army taking the field will put every aviator and every aeroplane into the air; there is no advantage in keeping any back. The first day will see both armies' aeroplanes in contact. The more numerous and faster fleet of aeroplanes must infallibly obtain the command of the air from the slower and less numerous, either by crossing them and "washing" them down as I have already described, or by fire action. The supply of spare pilots will be practically *nil* and of fresh machines very small, for obvious reasons. Hence the conclusion is forced on us that one side, by having smashed up or demoralised the enemy's pilots, will obtain the means of knowing all there is to know about the enemy; in other words, will dispel the "fog of war" as far as its own commander-in-chief is concerned.

Now we come to the point of the whole matter; how the aeroplane effects strategy. The French School favours a large reserve, complete control by the commander-in-chief and the out-manceuvring of the enemy. The Germans trust in the "fog of war," and go in bald-headed with an enveloping attack. In their system the French need quickly sent and accurate information; the Germans, co-operation and initiative. The aeroplane has made an end of the "fog of war"; the French have many aeroplanes, so it is not hard to see who is going to win.

The same applies to any civilised armies. On the first day of war, the air-craft of both sides, piloted by the junior subalterns of companies, squadrons, and batteries, meet. The slower and weaker side goes under, the subalterns whose machines get smashed go back to their companies, squadrons and batteries; and those who still have mounts keep their generals informed about all they want to know, no one hindering them. All this will happen before the independent cavalry have finished their first day's march. So we are again forced to the conclusion that civilised armies in general, and the Indian army in particular, must have aeroplanes and plenty of them.

The types of aeroplane we need are those the French have developed, since conditions in France and India are much the same. A suitable number to start with would be a hundred per division; the money for the re-armament of the heavy artillery would pay for these. The pilots would of course be found from among the younger officers and men of the division (seconded for a period of about two years, which is quite long enough to commence with).

Company and battalion commanders would be officers selected for further periods, whilst a permanent staff of at least one really skilled mechanic per machine is indispensable. The question whether single-seaters or machines carrying a crew of three or more (or both) are the best, can only be solved by war. Each infantry battalion needs aeroplanes for every-day practice.

Hence forty large hundred-horse 3-seater Breguets, twenty of the fastest single-seater Nieuports, and the same number of Blériots and Deperdussins recommend themselves as the machines to make up the hundred in the divisional air battalion.

On service the aeroplane takes the field as it stands, the crew need no baggage as they wear all they have: food, tools and spares are carried under the seat, and the supply of petrol and oil does not trouble the supply and transport corps, as each machine fills up from the advanced dépôt at railhead for its day's work.

In order to show that there are some people who appreciate the proper value of the aeroplane in war, I may say that the French army owns nearly three hundred aeroplanes all in daily use, and can put into the air on mobilization quite a thousand,—all piloted of course by soldiers, every French pilot is a sapper reservist. Little information is forthcoming about the German air service, though it is known that very large sums of money have been voted for it.

All other European nations have gone in strongly for aviation. The Russians have bought two hundred and fifty, of which many are at Ashkabad and Tiflis. The Chinese Government have purchased machines. The Turks are now advertising in France for aeroplanes and pilots. This forms rather a striking testimony to the value of the Italian aeroplanes in Tripoli.

Our own Air Battalion owns three good machines, one of which was bought by the late Lieutenant Cammell, R.E., and presented to the War Office; the other two have just been delivered.

There are also, or were, when I had the honor of being attached to the Air Battalion, six slow biplanes of antique design. Several heaps of wreckage also exist, notably the Paulhan biplane, which has only really flown once, a Blériot mark XII (a noted man-killer) presented by the Duke of Westminster, from the wreck of which Cammell narrowly escaped with his life; a fifty H.-P. Valkyrie in which the same officer was killed; an experimental machine in which Mr. Ridge of the army air-craft factory was also killed, and the Wright biplane in which the late C. S. Rolls was killed.

However, the War Office have promised the army a hundred aviators, and presumably machines to mount them. The elimination trials are to be held in June or July this year.

A very hopeful circumstance is the advocacy to the cause of Lord Roberts, whose letter published in this week's *Army and Navy Gazette* sets forth the case briefly and clearly.

I honestly think that any officer going home on leave could not do better than take his pilot aviator's certificate. The dangers are mostly financial; there are many human vultures in aerodromes, in a commercial as well as an aerial sense. Six and eight pence spent before signing a contract will be well laid out.

As a sport, aeroplaning is magnificent: the sensations experienced when making one's first flight are very remarkable indeed, rather like one's first lecture.

## THE FINAL CAMPAIGN AGAINST TIPPU.\*

During the period following the usurpation of the Mysore throne by Haidar Ali, the British territories on either side of that State (the Carnatic on the east, and Malabar on the west) were continually threatened and harassed. The security of these possessions varied only from time to time with the strength of the military establishments present in particular districts, and with their preparation for war. This unsettled state of affairs resulted in a marked decline in the value of these possessions of the East India Company. Agriculture decayed; the peaceful arts were neglected; public and private credit, shaken by repeated rumours of war, fell to a minimum; and further, the effects were felt in other parts of India, where the hopes of the turbulent and disaffected rose in proportion to the disquiet in and around Mysore.

On the death of Haidar Ali, Tippu, who had an even greater dislike and spite against the British than his father, pursued a similar policy of aggression and intrigue. He carried the policy to greater lengths. He was more energetic in his expeditions. He went further to seek alliances. He made more extensive preparations for the overthrow of British ascendancy in Southern India.

A crisis occurred in 1791, and a determined effort was made by the British Government to bring about a settlement. Seringapatam was invested, and would doubtless have fallen then, as it did eight years later, had not Tippu come to terms. By the treaty of 1792, which followed, Tippu's power and resources were only weakened for the time, not extinguished. He only nursed his hatred of the one power which he foresaw would always prevent him expanding his territories as he wished; and he soon recommenced his policy of reprisals and intrigue.

Tippu sent missions to the Isle of France, to Constantinople, to Delhi, and to the Musalmans beyond the Indus; all these had the same purpose, to negotiate for a coalition which should drive the British from India. Tippu also later corresponded with Napoleon in Egypt with the same idea.

In 1796 the intrigues and military movements of Tippu compelled the Governor-General to assemble the British army, which was then distributed in scattered stations on the coast of Coromandel; but no expedition into Mysore was undertaken.

In 1797 Tippu's doings gave such cause for alarm that it was not thought wise to despatch out of India a force which had been collected for an expedition to Manila.

In 1798 the situation became still more acute. Tippu's army was reorganized, and officered by selected men, all Musalmans. The

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\* The narrative is taken chiefly from the account by Lieutenant-Colonel Alexander Beatson, published in 1800.



French had gained the upper hand in the councils of the Nizam at Hyderabad, making the British alliance with that prince a practically useless one. The army of the Carnatic was spread over a large area, and it was feared that any attempt to concentrate the force would lead to an immediate invasion of the frontier districts by the army of Mysore.

It was well known that Tippu was openly tendering to the French an offer to enlist in his own service any men that they might send him, or to feed and equip any composite force they could furnish to help him; and further, it was known that this offer was being so far accepted, that French troops had actually landed at Mangalore, and had proceeded to Seringapatam.

#### PRELIMINARY MEASURES.

The situation found the man. Lord Mornington arrived in India in May 1798 and at once decided that prompt and effective measures must be taken to deal with the situation in Mysore. He ordered the Governor and Commander-in-Chief in Coromandel (Lieutenant-General Harris) to concentrate his scattered army; he also directed the Governor of Bombay to assemble a force on the coast of Malabar; these armies were to strike a blow at the root of all the trouble, Tippu himself.

Orders were issued on the 20th June 1798; but it was soon apparent that the mobilization of an army in a hurry was an impossibility. The same difficulty occurred then as we have seen in quite recent times. From motives of economy, current expenses in time of peace had been cut down by starving the transport services; so that now, when carriage was wanted, none was available. Consequently the first thing to be done was to collect sufficient cattle and vehicles to move the baggage, the stores, and the siege trains.

While this was being carried out an effort was made to strengthen the defensive alliances of the Company with the Nizam of Hyderabad, and the Peshwa of the Mahrattas, whose territories marched with Mysore. These two sovereigns had been given some of the former territories of Mysore by the treaty of 1792, on condition that they would watch Tippu's northern frontier, and repel his aggressions in that direction. In 1798, however, the Peshwa was useless as an active ally, as he was fully occupied in defending his own country against the Maharaja Scindia; whilst the Nizam was practically in the hands of a powerful French faction, now firmly established in the Deccan.

Of these two difficulties the latter was the greater; and the Governor-General set himself, with much astuteness, to counteract at once the influence of the French in Hyderabad. He made a new treaty with the Nizam, by which the subsidiary force of British troops to be maintained in Hyderabad was increased.

The additional force was assembled in Guntoor, and despatched to Hyderabad. On arrival there the Commandant, Lieutenant-Colonel Roberts, under the orders of the Nizam, surrounded the

French force in the place, disarmed the soldiers, and made the officers prisoners. This all happened without any bloodshed, as the French troops were at the time in a state of mutiny against their officers.

This master-stroke practically obliterated all trace of French ascendancy in the Deccan, and by its result the co-operation of the Nizam against Tippu was made possible. But apart from that the former strong French faction in the Deccan was prevented from affording Tippu any assistance. Eventually, it may be noted, some French trained soldiers actually formed part of the main army against Tippu.

The Mahratta empire was, on the whole, still favourable to the British alliance, but its disturbed state rendered it impossible to expect active help against Tippu from that direction. The Governor-General could, however, assure himself that want of power would prevent the Mahrattas interfering in the coming struggle either for or against the British.

By October 1798 transport in sufficient quantities had been organized, and Lord Mornington directed the Carnatic army, with a siege train, to mobilize on the Mysore frontier. At the same time he sent a force of 3,000 native infantry, with some artillery, from Bengal to Madras as a reinforcement.

Backed up by this show of force, he again opened negotiations with Tippu. Tippu again tried prevarication with a view to putting off the invasion of his country until the rains, by filling up the Cauvery river, would render his capital secure.

The time lost was spent by Lord Mornington (who had come to Madras in person) in completing the military preparations, and in collecting specie and grain. The negotiations dragged on till the 9th January 1799, when an ultimatum was sent to Tippu. No answer was received within a reasonable time, and on the 3rd February the Madras army was directed to enter Mysore territory; on the same day the Bombay army was ordered to be prepared to co-operate from Malabar.

#### COMMENTS.

These preliminaries to the campaign are a good example of the intimate connection between careful diplomacy and successful war. War is defined as the ultimate resource of policy; but the dividing line between the two is very narrow.

In this instance the policy was to preserve a balance of power among several neighbours, just as in Europe now political manœuvres are directed to the same end. In 1798, in Southern India, one power became overbearing and disturbed the peace of its neighbours. These combined, at the instance of the member chiefly affected; and, as negotiations failed to effect a settlement, war resulted between the offended powers and the disturbing element.

The same diplomatic efforts are being adopted now in Europe to maintain a balance of power. Alliances are reshuffled to counteract the aspirations of any power which threatens to disturb the

balance. Just lately these political manœuvres have been enough to avert war, but the dividing line was very narrow. In a similar way successful diplomacy has maintained an equilibrium on the Indian frontier; similarly also judicious alliances made possible a successful war for Japan in 1904.

In the dealings of the British Government with Tippu the intimate connection between policy and war is shown in these points: the negotiations were of no use until backed up by preparedness for war; the further preparation of the army for war went on concurrently with further negotiations for a peaceful settlement; during the same period the offensive alliances were arranged which made successful war possible; the timing of the commencement of hostilities depended on the creation of the favourable situation in the Deccan, and on the embarrassment of the French by defeat in Egypt.

There is also in these preliminaries an example of the underlying principle of British dealings with the various Indian States, during the times when British supremacy was being consolidated.

British forces have never attempted to tackle the whole of India at one and the same time. When force had to be employed against one member which disturbed the peace, other members have been used as the restraining force, directed by British brains, and stiffened with British bayonets.

The motto *Divide et impera* was the only possible motto for a Government which strove to keep the peace with a handful of white men among three millions.

#### THE PLAN OF CAMPAIGN.

The total forces of Mysore amounted to some 48,000 men. These were all adherents of Tippu, chiefly foreigners brought in by him to hold the country in which he himself was an alien. Of the total some 22,000 of the best troops, including the Frenchmen, were with Tippu at Seringapatam. The remainder were out in the districts, holding the various forts, or watching the frontiers. The country of Mysore is undulating, with outcrops of rock on the ridges, some of which rise into droogs, capped with forts of considerable strength. It is a country admirably adapted to delaying actions, and the forts form strong pivots for manœuvre against lines of communication or detachments. The terrain is also admirably adapted to cavalry action, and Tippu was strong in the mounted arm.

The defence of the country was, however, centred at Seringapatam. In Seringapatam were all the stores of arms, the chief treasure chests, and (an important point) the harems of Tippu and his generals. The fortress is on an island formed by two branches of the Cauvery river; it was strongly built, and had been much improved since 1792 under the guidance of the French engineers. It was well armed with 929 pieces of ordnance (brass and iron), and there

were 99,000 muskets or carbines available. Thus the central stronghold was perhaps of itself sufficiently strong to postpone the great decision until Tippu could engineer a diversion.

For the invasion of Mysore there were four armies :—

The Bombay army, which was to take post at Sedaseer, after marching up the ghats from Cannanore, was 6,400 strong, including 1,400 British troops.

The Madras army, which was assembled at Vellore, was 20,800 strong, of which 5,200 were Europeans. This army was well found in transport and supplies, and with the army was the following ordnance: 40 battering guns (chiefly 18-pounders), 57 field pieces (mostly 6-pounders) and 7 (8-inch and 5½-inch) howitzers.

Coming from Hyderabad to join the Madras army were some 10,000 infantry, of which 3,600 were sepoys trained by the French, but now commanded by British officers. In addition 6,000 of the Nizam's own cavalry were on the way.

In the southern parts of the Carnatic were some 4,000 more troops available to join the main force.

The idea was to advance from either side, driving in all opposition, on to Seringapatam. The Bombay army was to move direct from Sedaseer. The other three forces were to concentrate into one army under Lieutenant-General Harris, just east of the Mysore frontier, and move on Seringapatam from the point of junction.

Judged by our present standards it would seem risky for two forces, whose total strength was 36,000 men, to start so far apart, and attempt to concentrate against a selected point through a country held by an organized force of 48,000 men. This appears all the more risky when we add the factor of the want of any inter-communication. Against a Napoleon such strategy would have been exceedingly precarious. But an outstanding feature of all the campaigns, which resulted in the conquest of India, has been the immunity from defeat in detail of divided British columns, which came together eventually to strike a decisive blow.

It is possible that British columns may be forced to act again in the same way as in former days. The risk in future will be greater, as the enemy may know something of the principle of "interior lines." On the other hand, our columns will have the advantage of inter-communication, which was lacking in Tippu's time.

Even Tippu knew something of the advantages of his position between the two forces. He did move out eastward to attack the main army, but he thought better of it, and withdrew; he then made a half-hearted attack on the western force, but when that failed he retired completely into his fortress, and awaited a decision there.

One feature of the plan of operations has not been mentioned. It has been said above that Tippu expected help from the French, either from the Isle of France or from Egypt. From the latter direction help was for the moment out of the question, but it was

possible that an expedition might come from the Isle of France. Lord Mornington therefore directed Admiral Rainier to cruise with his squadron off the Malabar coast to make sure of keeping off any possible intervention; the squadron was also strengthened by the addition of two Indiamen from the Company's fleet.

#### THE PROGRESS OF THE MADRAS ARMY.

On the 11th of February the Madras army left Vellore, and after a quiet march camped on the 28th at Carimangalam; during this march, on the 18th, 12,000 of the troops from Hyderabad joined the force. From Carimangalam the army marched *viâ* Maranelly to Ryacotah, which place was reached on the 4th March. From here actual hostilities began, and the march was opposed, but after small affairs at Oodeadurgam and Rutnageri, the whole main army concentrated, on the 9th March, at Kelamangalam.

The force now numbered 31,000 men (exclusive of the 6,000 irregular cavalry of the Nizam); it included the siege train with a full supply of ammunition and stores; with the supply department were reserve supplies for 40 days for men and 20 days for animals; in addition there were a large number of "brinjaries," with their own transport, who could collect supplies *en route*; and the field treasure chest contained 6 lakhs of pagodas. So it can fairly be said that the army started very well found in equipment and supplies.

From Kelamangalam three routes led to Seringapatam. The first passed through Tahlee, Mallawaddy and Kankanhalli (Kankanelly), it was a short route, but it involved the capture and passage of a bad pass at Tahlee. The second led by Anekal, Talgautpooram, and Kankanhalli, and was the route followed by Lord Cornwallis in 1791. The third route was by Anekal, Talgautpooram and Chenapatam, near which place Tippu's army was supposed to be encamped.

The route selected was by Talgautpooram and Kankanhalli, as a move in that direction induced a feint on Bangalore, and the route was well known to be amply supplied with water.

The army marched from Kelamangalam on the 10th, meeting some resistance from the enemy's cavalry, who were also active in burning villages and forage. On the 12th the army halted two miles south-east of Jigeny, having met with no opposition from Anekal, the fort of which was left undefended and undestroyed by the enemy.

On the 14th Bangalore was seen, and a camp was formed at Cuttagerapetah, after a small engagement with the enemy's cavalry. On the 16th and 17th advances were made to Talgautpooram and Caglipooram respectively, the enemy only making cavalry demonstrations on the flank and rear. News was now received of the battle of Periapatam, where, on the 6th March, Tippu had attacked the Bombay army under General Stuart with 12,000 of his best troops and had been heavily repulsed.

On the 18th a halt was made owing to difficulties with the transport. The bullock drivers were making trouble over some new regulations about accounts, by which their usual emoluments were curtailed.

Arvally was reached on the 19th and Kankanhalli on the 21st. A night march was then made to Achel to secure two tanks, which the enemy had begun to destroy. On the 24th the Madur river was gained. The enemy under Syed Gaffur, with horse, foot, and guns, were in position to dispute the passage, but they withdrew on the advance of the British. On the 26th the army camped at Malavelly, and received information that Tippu intended to attack them as they left the jungle country through which the route had led till then.

On the 27th there was a general engagement. The enemy attacked the deployed army. The attack was broken by the fire of the 33rd Regiment, which (under Colonel Arthur Wellesley's orders) reserved its fire till the enemy were within sixty yards. The British cavalry charged the enemy while in confusion, and the British line advancing, completely routed the whole force of the enemy, who lost 1,000 men.

On the 28th, 29th and 30th the army crossed the Cauvery unopposed at Sosilay, and, after halting on the 31st, moved on the 1st and 2nd to within 5 miles of Seringapatam along the western bank of the river. By the 5th the army had worked round to position facing the west front of the fortress, some 3,500 yards from the wall, practically unmolested by the enemy since the battle of the 27th.

The apparent reason for the ease with which this manœuvre was carried out is that Tippu quite expected the attack on Seringapatam to be made against the eastern face, as in 1791; and that the unexpected move of the British to the western side so upset him that he could not in a hurry undo his elaborate plans for resisting attack on the old side, or form plans to meet the new situation.

The army now halted in this position and entrenched, preparatory to commencing the actual siege of the fortress. The position was uncommonly strong against counter-attack. The left rested on the Cauvery, the right on a high commanding knoll sloping towards the river, and in front was a winding stream covered by a chain of advanced posts. Within the position was an ample supply of good water and large quantities of excellent materials for siege works.

On the 5th and 6th operations began by determined attacks on the enemy's outposts on the west side of the river. These were eventually successful, and the army took up a final position for the siege on the 7th. A detachment was also sent out towards Periapatam to effect a junction with the Bombay army. This army eventually arrived before Seringapatam on the 16th, and, crossing the Cauvery, took up a position near the ruins of the old Delhi bridge, opposite the north face of the fortress.

It had now to be decided which was to be the point of attack, and, from what followed, it can be said that the choice made was a very happy one. It was determined to attack a prominent bastion, forming an acute salient, which points up stream in the angle of the fork where the Cauvery divides. This appeared to be the weakest, though newest, point in the fortress. Elsewhere were regular works, the walls and ditches flanked in every direction by heavy guns, and no face exposed to enfilade or reverse fire. But in the north-west bastion was a great weakness. The north wall was exposed to both reverse and enfilade fire from the western bank of the river; the western wall was similarly exposed to fire from the north bank, and that at only 1,000 yards range. Moreover, the bastion was faultily traced, for it left a considerable stretch of wall, some 500 yards in length, which was enfiladed from the north bank, flanked only by the fire of three guns. It was decided to attack the western face at this point, and to breach the curtain near the angle.

From the 11th the siege was advanced by regular and ordinary stages. No particular difficulties presented themselves, but rather the construction of parallels and approaches was obviated by the adaptation of a number of ravines and nullahs most favourably situated for use as works.

The batteries were constructed at night, and advanced by regular stages with the parallels. By the 24th the enemy's guns on the western face were practically silenced. On the 28th the enemy's last remaining foothold on the western bank was captured. The defenders were now all driven within the fortress, with the exception of some cavalry who were still out in the open country trying to attack the rear of the Bombay army.

The breaching batteries were in position on the edge of the western bank on the 31st, and fire was kept up against the point to be breached on the 1st and 2nd May. On the 3rd the breach was effected and reported practicable. Troops were massed for the assault in the advanced trenches by daylight on the 4th.

The assault was made at half-past one o'clock; it was led by Major-General Baird, and went off without a hitch; the forlorn hope only took six minutes from the moment of leaving the trenches to that of planting the first flag on the summit of the breach.

The north-west bastion was at once overrun by the assailants, who then spread down the works on both sides. A fair resistance was made inside the works, but the whole fortress was captured in a few hours.

Tippu himself was killed. His surviving officers, French, Musalman, and Hindu, were made prisoners. The whole of the soldiery of the Musalman dynasty lay down their arms. There was no trouble with the Hindu population; these were glad to be freed from their alien ruler, who though he did not oppress them, was yet unpopular.

The object of the campaign had been achieved by the death of Tippu. There was no intention of incorporating Mysore into

the territories of the Company. It was only necessary to make sure that the peace of Southern India should not be further disturbed from Mysore.

Consequently the old Hindu dynasty was reinstated, and a commission of British officers appointed, with Colonel Wellesley as president, to administer the country until the Rajas could take it over entirely.

To our allies the Nizam and the Peshwa small portions of the northern districts were allotted, in addition to those given in 1792.

#### NOTES ON THE CAMPAIGN.

*Communications.*—Certainly the secret of success in this campaign did not lie in the communications. In fact it is most noticeable that neither British force had any anxiety about them, or depended on them in any way. The reasons were that sufficient ammunition was carried with the army to see it through the campaign; the army practically lived on the country, which was really a richer country than that which it had started from; when once launched to the attack the commander was not dependent on orders from headquarters in Madras; retreat was not regarded as a possible contingency. So we see that nearly all the factors were absent which render a line of communications necessary.

Before taking, however, this campaign as a model for future operations in this respect, it must be noted that ammunition is fired away much quicker nowadays, so, if a column moves as a flying column, it must start with very large reserves. Again, under the altered conditions of the present time, there are railways running to most of the centres where operations are likely to take place, and it would be unwise to waste the advantages gained by operating along a line of railway if one is available.

But the fact remains that flying columns have been freely used in India in the past, and under many circumstances they will be used again.

*Supplies.*—It has been said above that the armies in Mysore lived on the country. The factors that enabled this system of supply to be adopted were—the richness of the country, transport with the army to collect the supplies, and money to buy the supplies.

In this respect we can accept the Mysore campaign as a model without hesitation. Future operations, if they are necessary, will take place in populated areas, as they will be directed against the population. Therefore it can be assumed that there will be food to be had. Some transport will be necessary to collect it, but the money factor is not so necessary, as the food-supplies can be collected by force.

*Conclusion.*—It is not argued that this campaign teaches lessons which are of universal application. There are some which can be applied, such as the connection between policy and war, and the value of strong measures. It may be also noted that this



campaign was the schooling of our greatest soldier, and for him it must have had lessons which were useful to him afterwards.

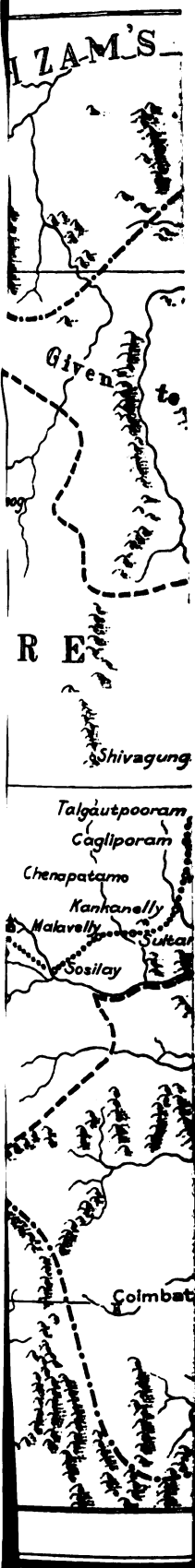
But it is contended that this campaign is full of lessons for the British army in India. One of the duties of that army is to maintain the peace, which former captains and armies have established. The methods of those leaders are certainly worth the study of the younger generation of soldiers who may have to cope with the same problems in this unchanging country.













## EGYPT.

A Lecture delivered in Simla in 1911.

BY LT.-COLONEL G. M. FRANKS.

LADIES AND GENTLEMEN,—I have been asked to lecture to you upon Egypt. I propose to deal with the subject from a soldier's point of view; that is to say, to give you a mixture of geography, history, and politics in their relation to the military problem with which we have to deal.

The interests of Egypt and India have, as you know, for centuries been somewhat interdependent. It is not only in modern times that Egypt's importance has been caused by her position on the road to India. In mediæval times it was her position astride the great trade route from East to West, from India to Venice, the seaport of Europe, that filled her treasuries and made the Mameluke Empire one of the most powerful in the Middle East.

The discovery of the Cape route to India was the death-blow of the Mameluke Empire, and the cause of the decline of Venice. When the Mamelukes and Venetians were defeated in the great sea fight off Din on the Kathiawar coast in 1509, and the Portuguese gained command of the eastern seas, the glory of Egypt departed for a period, and the wealth of the Indies was transferred, at least temporarily, to Portugal.

In later times Egypt came to India for administrators in the hour of need. From India came Sir Auckland Colvin, Lord Cromer, Sir Clinton Dawkins, Sir William Willcocks, and many others. They took up the work when Egypt was in the slough of despond, her treasury bankrupt, her army in open mutiny, and her peasantry oppressed beyond human endurance. That was some thirty years ago. Egypt is now one of the most prosperous flourishing, and lightly taxed countries in the world.

Nor has the army in India failed to play its part. Whenever there has been work to be done in Egypt, India has had a hand in it. From 1801 to 1897 Indian troops have in turn fought French, Egyptians, and Dervishes. In 1906 if the Turkish crisis had come to hostilities, there can be little doubt that the army in India would not have remained spectators. 1906 was the last occasion upon which the army in India was personally interested in events, or possible events, in Egypt. The centre of interest at that moment was the Sinai Peninsula. It is not a well known part of the world, and as the view you get of it from the P. & O. on your way home is not enlightening, I will commence telling you something about it.



After that I will deal briefly with the native races of Egypt and the Sudan, and then with the history of the country and the political and military situation. To those not acquainted with the history of Egypt, that land of anomalies, the existing situation is distinctly puzzling.

### SINAI.

I will therefore start by describing the Sinai Peninsula, and to give an idea of the area under discussion, will commence by asking you to take note of two distances, from Kantara on the Suez Canal to Rafah, and from Suez to Akaba. The first is 117 miles in a straight line, and is the same as that from Delhi to Umballa. The second is 155 miles, or about the same as that from Umballa to Lahore. By road these distances are of course considerably greater.

The Sinai Peninsula may be roughly divided for descriptive purposes into three main districts, which differ from one another considerably in their distinctive features. They are the northern and western strip of sandy littoral, between the mountains and the Mediterranean and the Canal; the central plateau; and the mountainous triangle in the south.

The northern littoral, between the Resan, Amaiza and Magara mountains and the sea, is a great waste of sand with tracts of shifting sand dunes. These dunes often extend for miles and have a height of as much as 200 feet. They are quite impassable for camels, as the sand crumbles under foot, and form most serious obstacles to movement off the beaten tracks.

This sandy tract sweeps round southwards between the Raha mountains and the Suez Canal, gradually narrowing, and changing from soft sand in the north to a hard flinty surface in the south.

Crossing the northern littoral, runs the old highway from Egypt to Syria, by Salhiya, Kantara, el Arish, and Rafah. Much of this route is over heavy sand and is not practicable for wheeled traffic, while lateral movement is rendered almost impossible by the sand dunes. Water is obtained from wells at considerable intervals, two of the stages being over 30 miles each.

This route has been crossed by armies from time immemorial, and was followed by Napoleon with a force of 12,000 men in February 1799.

Bordering this district of sandy desert, is an almost continuous semicircle of rugged mountains, running from Resan, Amaiza and Magara in the north, bending southwards down mountains Umor Sheb, Raha, and Somar, and then trending eastwards along Jebel el Tih, which practically cuts off the whole of the southern triangle of the peninsula.

This chain of mountains is extremely broken and rugged, especially in the west, where the escarpment towards Egypt is almost precipitous. The mountains run up to as much as 3,000 feet, and the pathways through them are so intricate and difficult

that except by the regular beaten tracks, it is almost impossible to find a way across unless guided by the local Bedouin.

In this barrier of mountains there are certain gaps through which the main routes pass. They are—

- (1) The gap between Magara and Umor Sheb.
- (2) The Umsayala gap.
- (3) Sudr el Haitan.
- (4) Wady Sudr.

Enclosed within this circle of mountains is the central plateau, which slopes gradually downwards from south-west to north-east as will be seen by the trend of the various water-courses, which have their source in the mountain ranges, and their outflow towards the Mediterranean and the Dead Sea. No water, as a rule, actually flows out of them, as it is absorbed in the sand during its course. These water-courses, however, indicate where water can in many places be found by digging.

The plateau is studded with isolated mountain features; the surface is, as a rule, hard and firm; and grazing and fuel are supplied by the low scrub which abounds in the *wadis*. A *wadi* is a nullah, or the bed of a water-course.

Across this plateau runs the old pilgrim road from Suez to Akaba by Nekhl, a distance of 155 miles in a straight line, with wells at considerable intervals.

The surface of the road is generally hard and stony, and only fit for pack transport.

Other routes cross the plateau running generally from east to west and passing through the gaps I have mentioned. They are all, however, extremely rough and difficult, and water is only found at great intervals, except in the rainy season which is the winter and spring.

In the dry season it is doubtful whether any force with more than 500 to 700 camels could use any one of these routes, and probably not more than four routes could be used altogether, including the northern coast road.

Almost in the middle of this plateau is Nekhl, the administrative centre of the peninsula, where there is a fort with a small garrison. Nekhl is connected with Suez by telephone.

The southern part of the peninsula is a wild and desolate country. The rugged and precipitous mountains, which rise to 7,000 and 8,000 feet are intersected by narrow and winding valleys, some of which, however, are extremely fertile. The routes are intricate and difficult, and, generally speaking, this part of the country is of little strategical importance owing to its situation.

The only towns in the peninsula are el Arish, which has some 5,000 inhabitants, and which is a telegraph station on the line from Egypt to Syria, Nekhl and Tor. The last is a signal station for ships, and is connected with Suez by telegraph.

The next point is the water-supply. There are no permanent rivers in the peninsula, but there are innumerable *wadis* of a

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torrential nature, which are dry, at least superficially, except for a few hours after heavy rain has fallen in the mountains.

The water is not, however, entirely lost, and in the beds of many of these *wadis* are springs, wells, or pools, which constitute the main water-supply of the peninsula. There are also a certain number of rock pools, and artificial reservoirs built to catch the rain water as it rushes down the mountain sides.

Most of these artificial reservoirs are extremely ancient and date from the Roman period or earlier.

The most important group of springs is that near Kossaima, namely, Ain Kadeis, Ain Gedairat, Ain Kossaima, and Ain Moelleh. *Ain* in the vernacular means a spring, as distinguished from *Bir*, a well.

At Ain Gedairat the water gushes out of the rock in considerable volume, and flows for  $1\frac{1}{2}$  miles through reeds and grass before it disappears in the sand to re-appear lower down as Ain Kossaima and Ain Moelleh.

These springs afford a sufficient water-supply for a very considerable force, and the supply could be largely increased by conserving what now runs to waste in the sand. In former days this was done, and at el Auja are the ruins of a fine city, said to have belonged to the crusaders, standing in a plain of 10 square miles which was once cultivated, and traditionally reputed to have been famous for its grapes.\*

In the Wadi Arish close to these springs is a group of wells and artificial reservoirs; and in the bed of the Wadi lower down is a series of wells which extends down to its mouth at el Arish.

Further west in the Magara mountains is another of those ancient rock cisterns of great capacity. The amount of water to be found in them depends upon the season and rainfall.

The wells in other parts of Sinai, such as Nekhl, Themed, and those along the northern route contain very varying quantities of water, but the group at Katia is important. It was at this place that Napoleon made his advanced *dépôt* in 1799.

Besides these more or less permanent water sources, during the latter part of the winter and in spring surface water is found in many places known to the Bedouin, who migrate in considerable numbers to the Turkish side of the border in the dry season.

The country to the east of the frontier is extremely desolate, rugged and mountainous, and water is scarce.

The Turkish frontier post is Beersheba, which is the centre of a fertile corn-growing district, and which is 30 miles in a direct line from the nearest point of the frontier, and 47 miles in a direct line from the springs at Kossaima.

A rough coast road runs from Jaffa by Ghaza to Rafah, which is only practicable during the summer, and then only for pack transport. Another and better road from Jaffa to Ghaza runs further inland.

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\* Acre, the last stronghold of the crusaders, was captured by Sultan Khalil in A. D. 1291.

A good road runs from Jerusalem to Beersheba, and a camel track from that place to Kossaima and Nekhl. From Maan on the Hedjaz railway there is a difficult road to Akaba (80 miles) with water only at considerable intervals.

Finally there is a track from Ghaza to Akaba which is very scantily provided with water. Turkish troops using this route are allowed to obtain water at the Kossiamma group of springs, but must not cross the border armed.

At Mayein you will observe there is a bend in the border line, which was made to allow the Turkish possession of one good well on this route.

It will be apparent from these remarks that the possession of the Kossaima group of springs is of first-rate importance to Egypt, and that the dispute in 1906 regarding the exact line of the eastern frontier of Sinai was by no means a matter of sentiment or academic interest.

#### NATIVE RACES OF EGYPT.

The next thing we come to is the description of the native races, who are of very varied types and of widely different origins. The Egyptians themselves are generally supposed to be of the Hamitic stock, the cradle of which was somewhere between the basins of the Euphrates and the Nile. They are, as I need hardly say, one of the most ancient races of the world, and are now represented by the Muhammadan Fellahin and the Christian Copts of Egypt. The latter are a very small part of the community.

The Fellahin are a race of fine physique, but devoid of martial qualities. They are cheerful, hardworking sons of the soil, devoted to their homes and families, and possessing many excellent characteristics. By nature they are excitable, and on the question of religion can be worked up to a dangerous pitch of fanaticism.

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In the Sudan they have retained their individuality to a much greater extent and are represented by the Jaalin, Kababish, Begara, and other more or less pure Arab tribes. They are a proud and

aristocratic race of considerable intelligence and ability, are naturally warlike, and are fanatical Muhammadans.

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In the Southern Sudan are the various pure Negro races, Dinkas, Shilluks, Nuers and others. They are aboriginal savages, and in some cases cannibals. They are brave and warlike, of good physique, and amenable to discipline. They make excellent soldiers up to a certain point, but are lacking in intelligence, and are excitable and difficult to control in action.

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One important difference, however, distinguishes them from the Egyptians and Turks, which is that though Muhammadans they do not recognise the Sultan of Turkey as the head of the Muhammadan religion.

An invasion of Egypt in force by the desert routes would hardly be practicable; but at a favourable season a considerable horde of Bedouin could travel by the northern coast route and, supposing that we were at war with Turkey, and Egypt itself were in a state of unrest, the attitude of the Senussi and his Western Arabs could not fail to be a source of some anxiety.

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## EGYPT.

A Lecture delivered in Simla in 1911.

BY LT.-COLONEL G. M. FRANKS.

LADIES AND GENTLEMEN,—I have been asked to lecture to you upon Egypt. I propose to deal with the subject from a soldier's point of view; that is to say, to give you a mixture of geography, history, and politics in their relation to the military problem with which we have to deal.

The interests of Egypt and India have, as you know, for centuries been somewhat interdependent. It is not only in modern times that Egypt's importance has been caused by her position on the road to India. In mediæval times it was her position astride the great trade route from East to West, from India to Venice, the seaport of Europe, that filled her treasuries and made the Mameluke Empire one of the most powerful in the Middle East.

The discovery of the Cape route to India was the death-blow of the Mameluke Empire, and the cause of the decline of Venice. When the Mamelukes and Venetians were defeated in the great sea fight off Din on the Kachhiawar coast in 1509, and the Portuguese gained command of the eastern seas, the glory of Egypt departed for a period, and the wealth of the Indies was transferred, at least temporarily, to Portugal.

In later times Egypt came to India for administrators in the hour of need. From India came Sir Auckland Colvin, Lord Cromer, Sir Clinton Dawkins, Sir William Willcocks, and many others. They took up the work when Egypt was in the slough of despond, her treasury bankrupt, her army in open mutiny, and her peasantry oppressed beyond human endurance. That was some thirty years ago. Egypt is now one of the most prosperous flourishing, and lightly taxed countries in the world.

Nor has the army in India failed to play its part. Whenever there has been work to be done in Egypt, India has had a hand in it. From 1801 to 1897 Indian troops have in turn fought French, Egyptians, and Dervishes. In 1906 if the Turkish crisis had come to hostilities, there can be little doubt that the army in India would not have remained spectators. 1906 was the last occasion upon which the army in India was personally interested in events, or possible events, in Egypt. The centre of interest at that moment was the Sinai Peninsula. It is not a well known part of the world, and as the view you get of it from the P. & O. on your way home is not enlightening, I will commence telling you something about it.

After that I will deal briefly with the native races of Egypt and the Sudan, and then with the history of the country and the political and military situation. To those not acquainted with the history of Egypt, that land of anomalies, the existing situation is distinctly puzzling.

### SINAI.

I will therefore start by describing the Sinai Peninsula, and to give an idea of the area under discussion, will commence by asking you to take note of two distances, from Kantara on the Suez Canal to Rafah, and from Suez to Akaba. The first is 117 miles in a straight line, and is the same as that from Delhi to Umballa. The second is 155 miles, or about the same as that from Umballa to Lahore. By road these distances are of course considerably greater.

The Sinai Peninsula may be roughly divided for descriptive purposes into three main districts, which differ from one another considerably in their distinctive features. They are the northern and western strip of sandy littoral, between the mountains and the Mediterranean and the Canal; the central plateau; and the mountainous triangle in the south.

The northern littoral, between the Resan, Amaiza and Magara mountains and the sea, is a great waste of sand with tracts of shifting sand dunes. These dunes often extend for miles and have a height of as much as 200 feet. They are quite impassable for camels, as the sand crumbles under foot, and form most serious obstacles to movement off the beaten tracks.

This sandy tract sweeps round southwards between the Raha mountains and the Suez Canal, gradually narrowing, and changing from soft sand in the north to a hard flinty surface in the south.

Crossing the northern littoral, runs the old highway from Egypt to Syria, by Salhiya, Kantara, el Arish, and Rafah. Much of this route is over heavy sand and is not practicable for wheeled traffic, while lateral movement is rendered almost impossible by the sand dunes. Water is obtained from wells at considerable intervals, two of the stages being over 30 miles each.

This route has been crossed by armies from time immemorial, and was followed by Napoleon with a force of 12,000 men in February 1799.

Bordering this district of sandy desert, is an almost continuous semicircle of rugged mountains, running from Resan, Amaiza and Magara in the north, bending southwards down mountains Umor Sheb, Raha, and Somar, and then trending eastwards along Jebel el Tih, which practically cuts off the whole of the southern triangle of the peninsula.

This chain of mountains is extremely broken and rugged, especially in the west, where the escarpment towards Egypt is almost precipitous. The mountains run up to as much as 3,000 feet, and the pathways through them are so intricate and difficult

that except by the regular beaten tracks, it is almost impossible to find a way across unless guided by the local Bedouin.

In this barrier of mountains there are certain gaps through which the main routes pass. They are—

- (1) The gap between Magara and Umor Sheb.
- (2) The Umsayala gap.
- (3) Sudr el Haitan.
- (4) Wady Sudr.

Enclosed within this circle of mountains is the central plateau, which slopes gradually downwards from south-west to north-east as will be seen by the trend of the various water-courses, which have their source in the mountain ranges, and their outflow towards the Mediterranean and the Dead Sea. No water, as a rule, actually flows out of them, as it is absorbed in the sand during its course. These water-courses, however, indicate where water can in many places be found by digging.

The plateau is studded with isolated mountain features; the surface is, as a rule, hard and firm; and grazing and fuel are supplied by the low scrub which abounds in the *wadis*. A *wadi* is a nullah, or the bed of a water-course.

Across this plateau runs the old pilgrim road from Suez to Akaba by Nekhl, a distance of 155 miles in a straight line, with wells at considerable intervals.

The surface of the road is generally hard and stony, and only fit for pack transport.

Other routes cross the plateau running generally from east to west and passing through the gaps I have mentioned. They are all, however, extremely rough and difficult, and water is only found at great intervals, except in the rainy season which is the winter and spring.

In the dry season it is doubtful whether any force with more than 500 to 700 camels could use any one of these routes, and probably not more than four routes could be used altogether, including the northern coast road.

Almost in the middle of this plateau is Nekhl, the administrative centre of the peninsula, where there is a fort with a small garrison. Nekhl is connected with Suez by telephone.

The southern part of the peninsula is a wild and desolate country. The rugged and precipitous mountains, which rise to 7,000 and 8,000 feet are intersected by narrow and winding valleys, some of which, however, are extremely fertile. The routes are intricate and difficult, and, generally speaking, this part of the country is of little strategical importance owing to its situation.

The only towns in the peninsula are el Arish, which has some 5,000 inhabitants, and which is a telegraph station on the line from Egypt to Syria, Nekhl and Tor. The last is a signal station for ships, and is connected with Suez by telegraph.

The next point is the water-supply. There are no permanent rivers in the peninsula, but there are innumerable *wadis* of a

torrential nature, which are dry, at least superficially, except for a few hours after heavy rain has fallen in the mountains.

The water is not, however, entirely lost, and in the beds of many of these *wadis* are springs, wells, or pools, which constitute the main water-supply of the peninsula. There are also a certain number of rock pools, and artificial reservoirs built to catch the rain water as it rushes down the mountain sides.

Most of these artificial reservoirs are extremely ancient and date from the Roman period or earlier.

The most important group of springs is that near Kossaima, namely, Ain Kadeis, Ain Gedairat, Ain Kossaima, and Ain Moeilleh. *Ain* in the vernacular means a spring, as distinguished from *Bir*, a well.

At Ain Gedairat the water gushes out of the rock in considerable volume, and flows for  $1\frac{1}{2}$  miles through reeds and grass before it disappears in the sand to re-appear lower down as Ain Kossaima and Ain Moeilleh.

These springs afford a sufficient water-supply for a very considerable force, and the supply could be largely increased by conserving what now runs to waste in the sand. In former days this was done, and at el Auja are the ruins of a fine city, said to have belonged to the crusaders, standing in a plain of 10 square miles which was once cultivated, and traditionally reputed to have been famous for its grapes.\*

In the Wadi Arish close to these springs is a group of wells and artificial reservoirs; and in the bed of the Wadi lower down is a series of wells which extends down to its mouth at el Arish.

Further west in the Magara mountains is another of those ancient rock cisterns of great capacity. The amount of water to be found in them depends upon the season and rainfall.

The wells in other parts of Sinai, such as Nekhl, Themed, and those along the northern route contain very varying quantities of water, but the group at Katia is important. It was at this place that Napoleon made his advanced depôt in 1799.

Besides these more or less permanent water sources, during the latter part of the winter and in spring surface water is found in many places known to the Bedouin, who migrate in considerable numbers to the Turkish side of the border in the dry season.

The country to the east of the frontier is extremely desolate, rugged and mountainous, and water is scarce.

The Turkish frontier post is Beersheba, which is the centre of a fertile corn-growing district, and which is 30 miles in a direct line from the nearest point of the frontier, and 47 miles in a direct line from the springs at Kossaima.

A rough coast road runs from Jaffa by Ghaza to Rafah, which is only practicable during the summer, and then only for pack transport. Another and better road from Jaffa to Ghaza runs further inland.

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\* Acre, the last stronghold of the crusaders, was captured by Sultan Khalil in A.D. 1291.

A good road runs from Jerusalem to Beersheba, and a camel track from that place to Kossaima and Nekhl. From Maan on the Hedjaz railway there is a difficult road to Akaba (80 miles) with water only at considerable intervals.

Finally there is a track from Ghaza to Akaba which is very scantily provided with water. Turkish troops using this route are allowed to obtain water at the Kossiamia group of springs, but must not cross the border armed.

At Mayein you will observe there is a bend in the border line, which was made to allow the Turkish possession of one good well on this route.

It will be apparent from these remarks that the possession of the Kossaima group of springs is of first-rate importance to Egypt, and that the dispute in 1906 regarding the exact line of the eastern frontier of Sinai was by no means a matter of sentiment or academic interest.

#### NATIVE RACES OF EGYPT.

The next thing we come to is the description of the native races, who are of very varied types and of widely different origins. The Egyptians themselves are generally supposed to be of the Hamitic stock, the cradle of which was somewhere between the basins of the Euphrates and the Nile. They are, as I need hardly say, one of the most ancient races of the world, and are now represented by the Muhammadan Fellahin and the Christian Copts of Egypt. The latter are a very small part of the community.

The Fellahin are a race of fine physique, but devoid of martial qualities. They are cheerful, hardworking sons of the soil, devoted to their homes and families, and possessing many excellent characteristics. By nature they are excitable, and on the question of religion can be worked up to a dangerous pitch of fanaticism.

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aristocratic race of considerable intelligence and ability, are naturally warlike, and are fanatical Muhammadans.

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In the western desert there is a sect of great importance, the followers of the prophet Senussi, who has his stronghold in an almost inaccessible oasis in the Lybian desert.

The followers of the Senussi are a sect of Muhammadans, who stand to that religion somewhat in the same relation that dissenters bear to the Church of England. The order was founded by Muhammad el Senussi, a native of Algiers, who was born towards the end of the 18th century.

He aimed at purifying the Muhammadan religion from innovations and heresies, and inculcating great simplicity of life; thus his followers were required to abstain from music, dancing, and other vanities, somewhat after the manner of the Puritans in England, and were also prohibited from smoking and drinking coffee.

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#### HISTORY.

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affairs ; how it has come about that the Sultan of Turkey is Suzerain of Egypt ; that an Albanian dynasty descended from a major of Bashi Bazouks, has reigned there for 100 years ; that England is *de facto* ruler of a country over which she has, technically speaking, no control whatever ; and finally the cause of the crisis in 1906 over the frontier of Sinai.

Egypt, as every one knows, was one of the Great Powers of the ancient world. The story of decline and fall of the ancient Egyptian Empire is strangely similar to that of every great empire of the past—Carthage, Rome, Spain, the Netherlands and many more. The description, which I found in an old history, of the Egyptians of nearly 3,000 years ago might be applied to any of those I have mentioned. It is as follows :—

“The nation had become wealthy and luxurious. The landowners were willing to pay for protection, but not to fight for their own country ; and the lower classes saw no reason why they should support an upper class whose members treated them as mere slaves.”

Luxury, anti-militarism, socialism, and class hatred did their work very effectively, and the inevitable downfall followed swiftly. Upper and lower class alike were submerged in the flood of foreign invasion and the last native Egyptian king who ever ruled in Egypt fled to Ethiopia before the conquering Persians over two thousand years ago. From that day to this the Egyptian has been the servant of foreign races.

I will pass over some 700 or 800 years, while Persians, Greeks, Romans, and Byzantines ruled in Egypt, and come to one of the greatest events in the history of the world—the great tide of Arab conquest which followed the birth of the Muhammadan religion, and swept across the whole of Northern Africa and into Spain.

Of all the conquerors who have invaded Egypt and held it for perhaps centuries at a time, the Arabs alone have left a permanent mark upon the people. This invasion took place about 640 A.D. The Arab flood spread itself through Egypt and up the Nile, past Nubia into Dongola, Berber, Khartoum, and Kordofan.

The bulk of the Egyptians, who had been Christians, were converted to Muhammadanism, though a part of the race clung to their old religion, and still survive as the Copts or Christian Egyptians.

The Arab Empire lasted for about 500 years before the inevitable decay brought its downfall. It was the same old story over again, wealth, luxury, and enervation. As the martial spirit declined, and intrigue of every sort increased, the Arab rulers took to importing slave soldiers from the virile races of the Caucasus and Asia Minor, partly to do the fighting their own people were becoming incapable of, and partly as a counterbalance to the insubordination of their own subjects.

These slave soldiers were called Mamelukes ; and though they were slaves bought in the open market, still they were bought solely for military purposes, and the Mameluke service became a

regular guild of professional soldiers held in high esteem, and possessing great power.\*

Individual Mamelukes rose to high office in the State and their number and strength increased to such an extent that finally they threw off the yoke, overturned their masters, and reigned in their stead. Thus in 1170 one Saleh-ed-Din, a Kurdish soldier of fortune, became the first Mameluke Sultan of Egypt and made himself famous in history as Saladin of the Crusades.

For the next few centuries followed a military despotism, such as has never been known in the history of the world. Dynasty after dynasty of slave soldiers bought as boys from the warlike northern tribes, ruled over the docile Egyptians with a rod of iron.

The country was divided up among a number of Mameluke Beys or Chieftains, who lived something after the manner of the predatory barons of Europe. Each maintained a small army of Mamelukes, and was constantly at war with his neighbours, except when he was employed in the larger wars of his Suzerain, the Mameluke Sultan of Cairo.† A dynasty seldom lasted for more than one or two generations, if so much, and the death of a Sultan was almost invariably followed by a period of anarchy and bloodshed till the strongest Bey succeeded in fighting his way to the throne, and disposing of his most dangerous rivals. About 90 per cent of the Mamelukes are said to have died violent deaths.

The native Egyptians were treated practically as slaves. Marriage with an Egyptian woman was considered an indelible disgrace, and even the children of Mamelukes by women of their own race when born in Egypt were looked down upon as unfit for soldiers.

To the genuine Mameluke boy, bought from the slave dealers of the Caucasus, everything in the land was open. He might rise to be a Bey or even Sultan by virtue of strength, bravery, and ability, and often enough by unscrupulous ferocity and treachery. The stream of recruits was incessant, and it is even said that parents gladly sold their children into the Mameluke service as being the finest opening in the world for an enterprising youth of good physique and totally devoid of any inconvenient scruples.

This Mameluke Empire flourished for about 300 years and comprised not only Egypt but Syria also. It was a period of almost incessant warfare, and Egyptian armies regularly crossed the deserts of Sinai to meet Crusaders, Tartars, and Turks in Palestine. Akaba, about which we heard so much not long ago, was used by Saladin as a naval base for some of his operations. The route by Kossaima and el Auja was also much used and the water-supply arrangements presumably well kept up.

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\* Ghengis Khan is said to have sold a batch of 12,000 prisoners of war to Saleh Najm el Din, Sultan of Egypt. With these he founded the famous Bahrite Mamelukes, so called from being quartered on an island in the Nile. The rival clan, the Burjite Mamelukes, Circassians, were quartered in the citadel.

† The Sultan kept up his own standing army of Mamelukes, and had a further call somewhat after the feudal system upon the armies of the Beys or Emirs.

In the intervals between these wars the Sultans lived in great splendour and maintained a magnificent court at Cairo. They were keen sportsmen and the prices paid for Arab horses would surprise even Indian polo players. The Arabian Nights is supposed to have been written at this time and to give a picture of Cairo under the Mamelukes.\*

In 1498 an event occurred which had far-reaching effects upon Egypt. That was the discovery by the Portuguese of the Cape route to India, and the consequent diversion of the rich trade of the East. Formerly the great volume of this trade had passed through Egypt on its way to Venice, and had paid heavy toll to the Sultans of Cairo. In fact it was one of the main sources of their wealth.

The Venetians felt the force of this blow no less than the Mamelukes, and a desperate effort was made by the two powers to drive the intruders from the Indian ocean. They met with some success at first, but the Trafalgar of the Indian ocean was fought off Cape Diu in 1509. Portuguese command of the sea was finally established, and both Egypt and Venice rapidly declined. Fate had, however, worse in store for the Mamelukes. The Turks, then at the height of their prestige, drove them out of Syria, crossed the desert of Sinai, took Cairo by storm in 1517, and added Egypt to the Ottoman Dominions, to which it has ever since belonged.

Their victory was celebrated by a ferocious massacre and 30,000 Mamelukes are said to have been beheaded on the banks of the Nile in the presence of the Emperor Selim.

Tuman Beg, the Mameluke Sultan, was betrayed by a Bedouin and hung by Selim at the city gate. The Bedouin was afterwards captured by the Mamelukes, who drank his blood in a loving cup. There were no white glove methods about war in those days.

Under Turkish rule Egypt was divided into 24 districts, each under a Mameluke Bey, while a Turkish Governor in Cairo represented the Sultan of Turkey.

Mameluke recruiting went on as before, Turkish prestige waned, and by the end of the 18th century the Mamelukes were again practically as strong and independent as ever. In 1798 came the landing of the French under Napoleon, the Battle of the Pyramids which broke the Mameluke power, and the Battle of the Nile which left the French army isolated in Egypt.

Both England and Turkey then prepared military expeditions to drive the French out of Egypt; but Napoleon preferring to take the initiative and attack rather than be attacked, crossed the desert of Sinai to meet the Turks in Syria. The route followed was the northern one along the Mediterranean coast, and the hardships endured by his army of 12,000 men were extremely severe. In fact

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\* You can still see the Turkish bath where the lovely princesses of the Arabian Nights performed their ablutions. I had a bath there once and wondered, I admit, whether the water had been changed since the princess's last visit.

had they been attacked by the Turks at el Arish before they had had time to replenish their water-supply and recover from the effects of the waterless march, they must have been annihilated, as they were practically demoralised by thirst.

After taking Jaffa, Napoleon besieged Acre, where he was repulsed by the Turks aided by the British ships under Sir Sydney Smith, and returned to Cairo, having gained nothing and lost some 5,000 men in his Syrian expedition.

Napoleon escaped to France in a frigate, and left his army to work out its own salvation.

In 1801, Abercrombie's British force landed at Abukir Bay. Abercrombie was mortally wounded in the heavy fighting at Alexandria, which cost us some 3,000 men. The army was joined by a force of Turks and Albanians, and marched on Cairo under Sir John Hely Hutchinson. Another Turkish army advanced by Syria, and a small force from India, under Sir David Baird, landed at Kosseir, crossed the mountains to Keneh and descended the Nile.

Cairo was besieged, the French surrendered with all the honours of war, and evacuated Egypt.

The British force was withdrawn in 1803, and the Turks and Mamelukes were left to fight for supremacy among themselves. This they did with such a hearty good will that the country was ravaged from end to end by one side or the other. Half starved and wholly unpaid Bashi Bazouks poured in from Turkey and Syria and looted the bazaars of Cairo. Finally the priests and notables in despair sent a deputation to Mehemet Ali, the chief of the Albanian contingent, and begged him to assume the office of Governor and restore order.

With the help of 5,000 well disciplined Albanians, Mehemet Ali succeeded in beating both the Mamelukes and the Bashi Bazouks, turning out the Turkish Governor and establishing himself in his place. He then reported to the Sultan that he had restored order in the troubled province of Egypt, sent a suitable present in cash to render the report more acceptable, and was definitely appointed Pasha by imperial firman.

This famous soldier of fortune, who was born the son of a tobacco merchant at Kavala, ruled Egypt for 40 years, and founded the present dynasty of Khedives. Sometimes in arms against the Sultan and sometimes fighting for him, he conquered Egypt and the Sudan, defeated the Turks in Syria, and at one moment had Constantinople at his mercy but for European intervention. In 1816 he reduced the rebellious Arabs in the heart of Arabia to submission, and sent their chiefs as prisoners with the keys of the holy cities to the Sultan. He annihilated the Mamelukes; and finally originated the modern system of irrigation by building the first great barrage across the Nile below Cairo.

The story of the dramatic end of the Mamelukes is briefly as follows:—

In 1811 Mehemet Ali had, in accordance with orders from Constantinople, prepared a great expedition to attack the Wahabi

rebels in Arabia, but while the Mamelukes still remained a force to reckon with in Egypt he did not dare to denude the country of troops. Their destruction was accordingly decided upon and carried out with unscrupulous treachery.

All the Mameluke Beys and their retinue were invited to attend the religious function in the citadel preliminary to the despatch of the Wahabi expedition, and to take part in the procession of the expeditionary force through the streets of Cairo.

The religious ceremony was conducted with great state, and the procession started down from the great hall of the citadel, the Albanians and Janissaries leading, the Beys in the centre, and Mehemet Ali's regulars bringing up the rear.

When the Beys were fairly entrapped in the narrow passage which leads to the gate of Azab, the Albanians shut that gate in their faces, climbed up on to the high walls on each side and shot them down in the narrow way, while the regulars behind cut them off from escape in that direction.

They still show you the Mameluke leap, where one of them is supposed to have leapt on his horse from the citadel wall. It is a sheer drop of about 80 feet on to solid rock, so I doubt the story.

The Mamelukes met their death swords in hand. To quote from Cameron: "The citadel had become a shamble, and not one of the Beys or their squires who had entered it an hour before, all panoplied and prancing, was left alive."

The massacre in the citadel was followed up by further massacres in Cairo and the provinces, and all that were left of the Mamelukes were chased south into the Sudan, where in 1898 we still occasionally found relics of them in the form of old Crusaders' swords, helmets, and mail coats.

We must now pass over a few years and come to the reign of Mehemet Ali's grandson, Ismail Pasha, the prince of spendthrifts, who brought the country to financial shipwreck by his reckless extravagance. In 1862 the Egyptian debt amounted to barely 4 millions sterling. In 1876 it was 91 millions, the finances of the country were absolutely disorganized, the peasantry ground down by taxation extorted by methods of incredible cruelty, and bankruptcy appeared inevitable.

European intervention could no longer be avoided and two Controllers-General, one English and one French, and four members of the *Cuisse de la Dette*, were appointed to receive the interest on the debt for the bondholders.

Enquiry into the state of Ismail's finances revealed a chaotic condition of affairs, and the difficulty of disentangling them was further increased by the sudden and mysterious disappearance of Ismail Sadeek, the Muffetish, who was the only man in Egypt who could throw any light upon them.\* Ismail proved extremely

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\* He was last seen driving with the Pasha in a brougham. It is generally supposed that he was strangled and thrown into the Nile to prevent any inconvenient disclosures.

restive under financial control, intrigue of every kind was rife, the army was in a mutinous condition, and finally it became evident that his deposition was unavoidable. This was carried out by the Sultan of Turkey, and tactfully intimated to Ismail by a telegram addressed to "Ismail Pasha, *ex*-Khedive of Egypt," in June 1879.

Tewfik Pasha succeeded his father, and shortly afterwards the mutinous spirit which had been smouldering in the army broke into flame in the Arabi rebellion. The native Egyptian officers and men rose in revolt against the Turkish and Albanian element who held all the higher offices of state and commands in the army. Arabi paraded his army before the Khedive's palace, the existing ministry was dismissed, a military despotism succeeded, and disorder became rampant, which finally culminated in the massacre at Alexandria on the 11th June 1882.

The bombardment of Alexandria by the British fleet, the refusal of the French to co-operate with us in restoring order, the landing of a British expedition, the battle of Tel-el-Kebir, and the occupation of the country by a British garrison, are matters of history well known to you all. The mutiny was quelled and Tewfik Pasha reinstated by British bayonets. We have remained in military occupation of Egypt till the present time, but in military occupation only. Egypt is neither a part of the British Empire, nor a Protectorate.

The Great Arab rebellion, the rise of the Mahdi, and the loss and eventual reconquest of the Sudan, would require a lecture to themselves, so I will not attempt to deal with them, but will pass on to the Akaba crisis, 1906.

#### AKABA CRISIS.

A few words are necessary to explain the political situation and the attitude of the Egyptians when this crisis occurred.

The position of England in Egypt since 1882 has been an anomalous and extremely difficult one. Egypt, as I have already pointed out, is a part of the Ottoman and not of the British Empire. She is, as part of the Ottoman Empire, subject to a number of international fetters and restrictions, both financial and legal; and England in working out her reformation has been hampered in every way by these restrictions and by the fact that we have no regular status in the country. Lord Cromer and the British officials in Egypt have been throughout merely in the position of advisers to the Khedive and his ministers, but it has been borne in upon the latter that their advice is meant to be taken.

The peasantry have to a great extent forgotten the miseries endured in former times, and it is doubtful how far they attribute the amelioration of their condition to British influence. Everything is done in the name of the Khedive, and he naturally gets much of the credit in the minds of the ignorant and uneducated Fellahin. They are intensely, almost fanatically, devoted to their religion, and they

have a marked dislike for Christians in general and foreign ones in particular.

The attitude of the Turkish Pashas and certain native officials, who have suffered the loss of their former prerogatives, can be readily understood. Finally there is a large and increasing class known as the "Effendis," clerks, journalists, etc., who may be compared with the babu class in India, and who have somewhat similar aspirations and methods of expressing them.

Among the Muhammadans of these different classes there is, therefore, for different reasons, a distinct leaning towards Turkey and their co-religionists, while the British occupation of Egypt is a point upon which it is well known that the Sultan is extremely sensitive.

On the other hand, we must not ignore the camaraderie and friendship which has grown up between British and Egyptian officers and officials. Exceptions there have been, no doubt, and the mutual sympathy has perhaps never equalled that which exists in India, but the Egyptian officer has generally proved a loyal and trusty comrade.

In these circumstances some uneasiness was caused in official circles in January 1906 by the news that a Turkish post had been established at Taba, inside the Egyptian border near Akaba.

A small Turkish post at Taba was not in itself a menace, but the principle involved was the integrity of the eastern frontier of Egypt. It soon became apparent that the object of the Turks was to dispute the definition of the frontier as then generally accepted and to make a bold attempt at securing a foothold within striking distance of Egypt.

In fact what was desired was a foothold in the central plateau of Sinai, with the command of the water-supply I have described to you, and complete possession of the Gulf of Akaba, both sides of the water. The mouth of the gulf is almost closed by a reef and entrance is gained by a channel about 400 yards wide on the western side, which could be covered by a fort at Cape Nuzerani. Thus closed it could be made into a convenient naval base dominating the Red Sea.

The effect upon the security of Egypt of these propositions, enhanced perhaps by railway connection between Maan on the Hedjaz railway and Akaba or some point nearer Suez; and the effect upon our communication with India of a possibly hostile naval base in the Red Sea, I need not point out.

Muhammadan feeling was, as you will recollect, running high at that time. There was trouble between the French and the Muhammadans in Morocco, and the Algeciras conference was in consequence then sitting. The moment was auspicious for Turkey to make an attempt to recover her former prestige in Egypt, and the attitude of certain European powers was for a time uncertain.

In Egypt itself anti-British and religious sentiment was encouraged by agitators. The peasantry knew nothing and care less

about the frontier of Sinai. The frontier of Egypt as they understood it was the Suez Canal. The news as it reached them was that the British were bullying the Sultan, the head of their religion, and consequently oppressing Islam. Fanaticism was aroused and a most dangerous spirit was stirred up among a naturally excitable people.

Negotiations dragged on for months, both sides carefully avoiding any act which would provoke actual hostilities, until finally the Sultan found himself entirely without European support, and at the eleventh hour, when directly menaced by the British fleet, he gave in, ordered the withdrawal of the post at Taba, and consented to the demarcation of the frontier of Sinai upon the basis of our original contention, namely, an approximately straight line from Rafah to a point 3 miles from Akaba.

This concludes my lecture, which is necessarily very incomplete, and which has hardly touched upon the Sudan at all. I have endeavoured to the best of my ability to sketch the general outlines of our position in Egypt, and to show more particularly the causes of friction with the Turks and the strategical situation on the frontiers, with a few words explanatory of the attitude of the Egyptians themselves towards the British occupation.

I think you will agree that an invasion of Egypt from the east is not an enterprise to be lightly embarked upon, especially since the demarcation of the frontier has given Egypt undisputed possession of that important stepping-stone the group of springs near Kossaima, which is practically the key of the position. Those springs are now guarded by block-houses, and the outposts at Kossaima are connected with Nekhl by telephone.

#### INTERNAL UNREST.

As regards internal troubles in Egypt, they are not, I think, of a nature to give cause for very serious apprehension. The peasantry are contented and satisfied. They have good cause to be. For the first time, in at any rate the last twenty centuries, they are what our prayer book calls "Godly and quietly governed." They are prosperous and even rich. Taxation is light, military service is lighter. In old days it meant exile and death in the Sudan. Now it is little more than a wholesome course of discipline and hygiene, whereby the rising generation is benefiting in health and morals.

Serious disaffection cannot breed in such a soil, it has nothing to feed upon. Religious fanaticism is the only real danger, and that is remote, as we are very careful to avoid offending religious sensibilities. A great religious war between Christian and Moslem would, however, no doubt produce a critical situation in Egypt.

At the same time do not let us run away with the idea that any sentiment of gratitude warms the breast of the Egyptian peasant towards us. Such a sentiment is entirely foreign to his nature. Twenty centuries of oppression have eliminated from his mind any



understanding of the word. Altruism is to him a quality unknown. That any man should benefit his neighbour without the ulterior object of benefiting himself is a theory beyond his grasp.

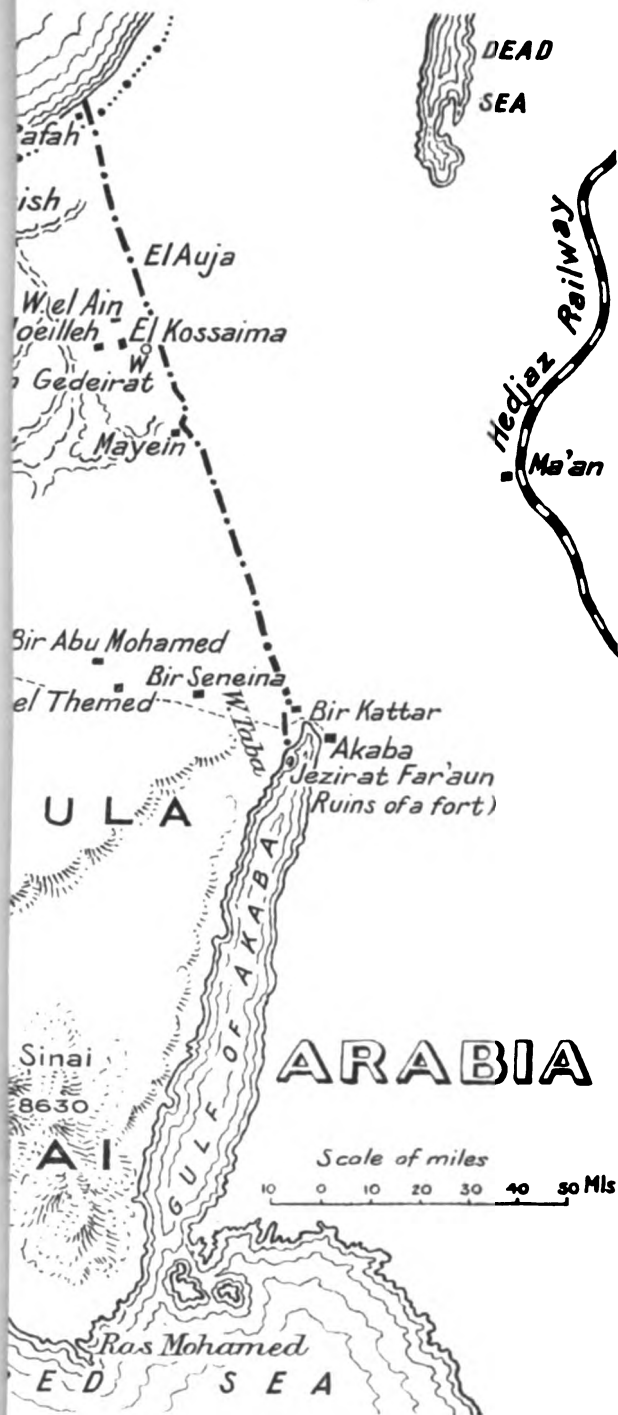
He accepts favours received with a lively anticipation of favours to come. For the rest he dislikes us as foreigners and Christians, and it must be admitted that the manner of the Englishman is not always wholly ingratiating in dealing with a race for which he has no great admiration. An Egyptian acquaintance of mine once summed up the difference between an Englishman and a Frenchman as being that "the tongue of the Frenchman was very soft and the heart of the Englishman was very hard."

It is the absence of altruism and public spirit that really takes the sting out of any Egyptian agitation. The agitators themselves have not got it. Not one man among them really trusts his fellow. Each is playing for his own hand under the license accorded to such people by our theory of government. He is in fact the by-product of our system of government and education, combined with liberty of the press in a country where no liberty of any kind has existed before.

In Mameluke times vexatious politicians were nailed to a door and paraded through the city on the back of a camel. Ismail had less picturesque but equally effective methods. Nowadays the agitator can emerge into the sunlight and get a great deal of advertisement at very small risk. He is also sure of finding congenial spirits among a certain class of English politicians, whose sympathy is enhanced by their entire ignorance of the subject.

British officials and British officers in Egypt continue their work of regenerating the country, and making men out of the descendants of generations of serfs, undisturbed by such clamour. In the good British way they continue to do with all their might whatever their hand findeth to do, and it is fair work and square.

Nor should it be forgotten that from the same class which produces the agitator comes the very much larger body of quiet honest workers, who in the office and in the field follow in the footsteps of the Englishman. Few of us who have served there can have come away without warm remembrances of good and trusty friends and comrades. Remembrance, too, of gallant deeds done by sons of the soil who have succeeded to the heritage of their more picturesque and warlike predecessors, the Mamelukes and Albanians.





## NOTES ON THE MORAL OF THE JAPANESE ARMY.

BY CAPTAIN G. L. BLAIR, 36TH SIKHS.

The Japanese are, as a race, exceptionally homogeneous. Their origin is much disputed, but it is generally admitted that they have inhabited Japan for at least 2,000 years and have not received any considerable foreign addition during that period. The only non-Japanese element in the country is the Ainu. These people once held almost the whole of Japan, but they were long ago driven up into the North Island, where only a few thousand of them now survive. Some think that the depressed class, the Eta, is a mixture of Japanese and Ainu blood, but in any case this class is small and tending to merge into the general population. The Koreans are now Japanese subjects, but the law of conscription has not been applied to Korea and no Koreans are enlisted in the army. The Japanese can only afford to equip and train a limited number of their own people and therefore do not waste their money on what they no doubt consider inferior material.

The 100,000 recruits who join the colours on the 1st December of each year are, then, practically all of one race, with a common language and common national traditions.

Considerable differences, however, exist in the value of this mass of raw material. The men of some districts have better reputations as soldiers, dating from the not very distant feudal wars, than those of others. Varying local conditions also produce their effect. Recruits drawn from the big towns have neither the physical endurance nor the good spirit of the peasants. Boys of the middle class, again largely townsmen, sometimes look on their military service as a period of physical hardship and as time lost in the race for success in their future professions. Any cases which occur of wilful injury in order to secure rejection in the medical examination are found in this class. The peasant, on the other hand, knows that his work in the army will be no harder than the labour of the rice field and that in barracks he will be better lodged, clothed, and fed than he is in his village. As the divisions are, to a great extent, recruited from definite territorial areas, these differences are reflected in their fighting value. Of the 19 divisions, only three, the Guards, 1st, and 4th, are mainly recruited from large towns. The 4th is drawn from the great industrial city of Osaka, which has a population of a million, and is certainly not considered the equal of the country divisions. The 2nd and 12th have, perhaps, the best reputations; the former is recruited from a mountainous district in the north of the main island, and the latter from an equally mountainous part of the southern island.

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Although all classes of the population are caught by the net of conscription yet, if 16 divisions out of 19 are recruited from the

country districts, we may say with tolerable accuracy that the Japanese soldier is the Japanese peasant in uniform. It is clear, too, that as long as Japan is mainly an agricultural country and the conditions of life of the peasant remain as they are to-day, the *moral* of her army is not likely to undergo any great change. The root of the matter is to be found in what the peasant believes when he is enlisted and what the army teaches him afterwards.

Much has been written on Japanese religion and Japanese patriotism. We are not concerned with the philosophical aspects of Buddhism and of Shinto, but must form some idea of how these religions affect the private soldier. Even to this question it is very hard to find the answer. Those Europeans who have made a life-study of the Japanese can hardly state, in terms intelligible to the Western mind, what he believes and what he does not believe. The peasant certainly looks on both Buddhism and Shinto as good and visits the temples of both faiths impartially. His main belief is ancestor worship. The dead are believed to have enormous power to assist or, if they are not propitiated, to injure the living. The humblest Japanese may, then, if he dies well, become a force for good, able to assist his compatriots to all eternity. No more impressive ceremony can be imagined than the Festival of the Dead in Battle. In the great shrine in Tokio are kept the name-tablets of 40,000 men killed in action. Every spring the garrison parades before the temple and presents arms with fixed bayonets to the Dead. This salute with fixed bayonets is ordinarily reserved for the Emperor, and we may think, if we will, that the Japanese thus teach the lesson that a private soldier, if he dies for his country, is entitled to royal honours. Many traces of the old belief that the Emperor is a living God are still to be found. It is, for instance, considered disrespectful to look down on him, and the upper storeys of houses through which he is to pass are therefore cleared of spectators and hung with curtains. He is the religious as well as the civil head of the State, and a personal and passionate devotion to the Emperor is a marked feature of the Japanese character. Lafcadio Hearn notes that when he, as a teacher in a school, asked his pupils to write essays on their greatest wish the subject chosen was always—"To die for the Emperor." The Japanese are also much attached to their country, from which they emigrate with reluctance, and are convinced of the superiority of their race which their legends teach them is descended from the gods. Religion and patriotism thus combine to form the strongest force imaginable to compel a Japanese to sacrifice himself, if required, for his country.

The respect for authority, so marked among the lower classes, is in part due to this feeling of loyalty to the Emperor, in part to the severe discipline of the feudal *regime* which came to an end less than 50 years ago. Each feudal lord had absolute power over his people. A famous story relates how the peasantry of a certain lord were driven to despair by his oppression. At last one of them, well knowing the penalties involved, made his way to Tokio, hid beneath

a bridge and when the Shogun (the Emperor's *Maire de palais* and *de facto* ruler of the country) passed, came out and presented his petition. Enquiry proved that the complaint was well founded, and the unworthy lord was banished. The petitioner, however, had broken the law which forbade approach to the Shogun, and was sentenced to be crucified. His family, too, must be rooted out, and, as he hung dying, he had to see his children killed before his eyes. This story is told in Japan to-day not, it may be noted, to illustrate the tyranny of the feudal period but as an example of high self-sacrifice. It can well be imagined that with the memory of a social order maintained by laws of this ferocity still recent, the sense of discipline of the Japanese people must be exceptionally strong.

General Ian Hamilton remarks that when he saw bands of school children being marched down to watch troops entraining during the war, he said to himself "there go the invincible armies of 1920!" This idea, that the children of to-day must be regarded as the soldiers of to-morrow, is familiar to Japanese officers. The military authorities clearly realise that now that the term of service of the bulk of the army has been reduced to two years it is more than ever important that the schools should lay a sound foundation on which the company officer can afterwards build. In the country town in which the writer lived in Japan there was a normal school, *i.e.*, one in which teachers were trained for the national primary schools to which all children must go. The Colonel of the local regiment, a busy man, found time to visit this school and deliver a lecture to the teachers of future generations on the "martial spirit." Another field officer of the regiment, who had travelled abroad, addressed them on "the connexion between schools and national defence in Europe." This school had a museum of trophies of the Russo-Japanese war, and an equipment of old army rifles with which the pupils carried out regular military drill.

The ordinary peasant only attends the primary school, which he leaves at the age of 12 to 14. Before he joins the ranks he will have forgotten the small amount of elementary drill taught in the schools, but he will never forget what he learnt of Japanese history and of his duty to the Emperor during the most impressionable years of his life.

To the moral qualities possessed by the recruit when he comes in, the army endeavours to add others--summed up in the expression *gunjin seishin*. This is roughly the equivalent of the "soldierly spirit" of our Infantry Training, 1911, paragraph 3. It is usually, and more forcibly, translated "the martial spirit." We shall see that the main feature of Japanese military training is that so much of it is deliberately directed to the cultivation of this "martial spirit."

A British officer attached to the Japanese army is at once struck by the fact that bayonet fighting takes the place which is occupied by musketry in the training of our infantry. It is partly for historical reasons that the cult of the bayonet is so firmly rooted.



Up to 50 years ago Japanese fighting was almost entirely done on foot with the heavy sword, wielded with both hands, which is still taken on service by most officers. It was natural that when an army was formed on modern lines much attention should be paid to the new *arme blanche* of the infantry soldier. After our war with the Boers the Japanese General Staff inclined to the view that even a determined enemy could usually be dislodged by fire alone. The period between the South African and the Russo-Japanese wars was, however, so short that such ideas never permeated the army as a whole and the check to the belief in the value of the bayonet was slight. The realities of contact with the Russians soon caused the staff to modify its views, and since the war the importance of training in the use of the bayonet has been preached more vigorously than ever.

If we wish to learn what are the methods employed by the Japanese, we have only to turn to our own Infantry Training, Appendix I, which reflects most of the Japanese ideas. They have always taught their men to point only at the enemy's body and that a two-handed thrust is required to disable an opponent. They use the method of instructor *vs.* pupil freely and aim at producing a strong, determined fighter likely to be useful in a rough and tumble *mêlée*. Every infantry company has on charge 64 sets of the cheap and strong bayonet-fighting equipment which is in use in the Japanese army. Company commanders are thus able to give their men as much practice as they may wish. In the course of the year every man, whether recruit or trained soldier, does a large amount of bayonet fighting: on wet days the beds are turned up in the barrack rooms and space is obtained to allow of additional practice when other forms of training are impossible. Apart from actual bayonet fighting, much is done to familiarise the men with this weapon. Recruits, early in their training, are taught to charge and squads are made to double, with fixed bayonets, round a point from opposite directions, so that they are forced to pass each other on the run and learn to handle their bayonets carefully. At manoeuvres bayonets are fixed for the charge, always by day, and by night at the discretion of commanders. Accidents are very rare: the whole thing is simply a matter of practice and of strict discipline. The fact that the men of different regiments are all of one race of course removes one possible source of danger.

With what object is so much time devoted to this form of training? Bayonet fighting is, in itself, good physical exercise, but the field hospital returns of all wars show that casualties caused by the bayonet are negligible as compared with those claimed by the bullet. Why not spend the time on increasing efficiency with the deadlier weapon, the rifle? The Japanese answer to such questions is that the value of instruction in the use of the bayonet is moral not physical. They maintain that the only way to implant the offensive spirit in each individual man is to give him all the bayonet fighting possible and to convince him that he is so good with this

weapon that he has only to close with his enemy to be sure of defeating him. Value for the time spent will be obtained on the battlefield, not in the shape of large numbers of the enemy killed or disabled by the bayonet, but in the unquenchable desire in each man to press in and finish the matter with cold steel.

In close order drill and in the handling of arms great precision is demanded. Owing to some peculiarity of the Japanese temperament, the men's attention can be maintained for long periods and close order parades lasting three hours are common. It is considered a great aid to discipline to force the men to carry out movements with precision when they have already done a spell of hard work: thus, after coming off a 20-mile march, troops will do an hour's battalion drill before being dismissed.

Colours are still taken on service by the Japanese army. They are carried by the assistant adjutant and are treated, as the emblem of the regiment, with even greater respect than in other armies. However few sentries are mounted, one can always be spared for the colours. The 63rd Regiment of Infantry (to which the writer had the honour to be attached) was able to practise great economy in the matter of sentries, owing to a well thought out system of barrack construction. The three battalions only mounted seven, but of these one stood day and night over the regimental colours.

The principles contained in the Imperial Edict to the army which declares patriotism, obedience, courage, fidelity and frugality to be the five duties of a soldier are taught by means of a regular programme of lectures. To a concrete-minded Englishman, the teaching of these abstract principles to soldiers by lectures seems extraordinarily difficult and few of us would care to undertake it. A Japanese company commander adopts the simplest methods. One company of the 63rd Regiment had some 40 pictures, about 2 feet by 3, mounted on rollers. They had been painted in colours by a man in the company and, although rough, were extremely effective. They represented incidents from old Japanese history and acts of gallantry performed in recent wars, *e.g.*, one particularly vivid picture showed a man cutting a wire entanglement under heavy fire in front of a fort at Port Arthur. If the company commander was lecturing on, say, the necessity for endurance, he would illustrate his remarks by a story of how a private soldier refused to go to hospital before the battle of Mukden and fought with his company, although seriously ill. He would give the soldier's name, corps, and all details in full and have the picture showing the man limping into action unrolled. These lectures were always delivered in the simplest possible language and were certainly successful in keeping the men's attention. It was noticeable that when the Divisional General made an informal inspection of the regiment, one of the first things he did was to send for the company commanders' notes for these lectures on the "martial spirit."

The ceremony which took place in one company when the recruits received their rifles gives a good example of the means

employed to impress the men with a high idea of their duties on every favourable opportunity.

All officers of the company attended, in full review order. The company commander first explained to the recruits that they must look on their arms the same way as the knights had formerly looked on their swords and must consider any injury done to them as a stain on their own honour. Each recruit then came up, bowed received his rifle with fixed bayonet from the company commander, bowed again and fell in. They were then told that the soldiers of to-day were like the feudal retainers of old times, except that they were the retainers of H. M. the Emperor, whose crest was on every rifle. In the old days, only the knights were allowed to bear arms, but now they all, as soldiers, had that honour. The modern "martial spirit" was the same thing as the old *yamato-damashii* (literally, "the soul of Japan") and that had existed from the beginning of the Japanese Empire. From books and plays they must all have some idea of what *yamato-damashii* meant to the knights and they must regard the "martial spirit" in the same light. The weapons they now held in their hands were, in a peculiar degree, worthy of honour as they had all been actually used in the great war with Russia. With these rifles Port Arthur, "the strongest fortress in the world," had been taken and the annexation to Japan of Korea, of which they had just heard from the newspapers, was also due to the work done with these very weapons. The artillery so valued the guns with which they had fought during the war that each battery held a farewell ceremonial when it had to part with its old guns on re-armament. The weapons they had just received were certainly no less worthy of respect. If rifles and bayonets were not properly kept they were of no use in war. Later, the method of keeping their weapons would be explained to them, and they must all make every effort to learn what they were taught and not to disgrace their arms in any way during their two years' service.

A talk of this sort would sound like theatrical nonsense if it were delivered to a roomful of British soldiers, but it appealed to the deepest feelings of those Japanese boys. Ideas of this kind are familiar to all Japanese and the company commander was able to speak quite simply and naturally about them to his men: it will be noticed too that he showed a fine sense of historical continuity.

The teaching of the offensive spirit is regarded as a most important part of the training in *moral*. The tactics of the Japanese had always been strongly offensive and just when they were setting about the creation of a modern army the Franco-Prussian war took place. Its events, as was natural, fixed their attention and they at once proceeded, in the most business-like manner, to discharge the French military instructors whom they were then employing and to obtain Germans in their place. Japanese officers were also sent to Germany to study, and German strategical and tactical ideas, the doctrine of the offensive included, were adopted wholesale. As regards the last named, it is a question if the pupil

has not outstripped the teacher. The doctrine of the offensive exactly suits the national temperament of the Japanese and the war with Russia clearly showed to what lengths they are prepared to go rather than be thrown on the defensive. In the various regulations issued since the war the necessity for assuming the offensive, and of maintaining it at all costs once assumed, is taught in the strongest possible language. *E.g.*, paragraph 4 of Japanese Infantry Training says:—"Victory and defeat do not depend on numbers alone: well-trained troops, filled with the spirit of attack can always obtain the victory, even when in inferior numbers."

The Russians have, however, given clear proof that the teaching of the offensive spirit by regulations and by the ordinary methods may be quite insufficient to ensure the application of this principle under the strain of war. In their case the absence of a leader of genius (so necessary to the Russian soldier) and of a moral principle underlying the war no doubt affected *moral* most adversely. Middle-aged Russians often remark on the contrast between the enthusiasm shown in the Turkish war, which the soldier regarded as fought in order to free his brother-Slavs and brother-Christians from the Muhammadan, and the supineness of the rank and file in Manchuria. Russian regulations and Russian military literature however, had long preached the doctrine of the offensive as vehemently as could be desired, and the complete failure to put theory into practice was a most striking and disquieting phenomenon.

The Japanese are not content to rely on the teaching of their regulations and on their historical traditions (reinforced now by those of the Russian war) for the maintenance of the offensive spirit. In addition they employ two main instruments of instruction: bayonet fighting (which we have already considered) for the infantry soldier and, for all rank of all arms, the conduct of manœuvres and of tactical exercises.

It is no exaggeration to say that the British-trained officer's first experience of a Japanese field day leaves on his mind a feeling of absolute stupefaction. The artillery of both sides makes little or no use of covered positions: that of the assailant frequently comes into action under prohibitively heavy rifle and artillery fire from the defender. The assailant's infantry deploys late, extends in successive lines to two paces, makes small use of ground, and advances at an almost continuous double towards the defender's position, supported by little covering fire except that of its own artillery. Before the assault is delivered the line has sometimes thickened in places to 8 or 9 men deep. The defender, if he has correctly guessed the direction of the main attack and placed his general reserve accordingly, has meanwhile brought it up to his line of defence. His whole line then meets the assault by leaving a fire position which is usually excellent and charging with the bayonet. The numbers of the cavalry are so small that their action does not affect the operations: in the earlier stages the patrols have shown the reckless gallantry common to mounted scouts on the manœuvre

grounds of all nations. The umpires are mainly engaged in taking notes of the course of events and rarely interfere with the action of the troops. In the ensuing conference criticisms will be heard of the choice of positions and of the line of attack and of any failure in combination. Want of decision, if a fault of this kind can possibly be detected, will be severely blamed. Not a word will be heard about the failure to use covering fire in the attack nor the possibility of destroying the assault with the rifle. Unreality culminates in Grand Manœuvres, when great masses of troops may be seen advancing under the fire of quick-firing artillery.

It is not true to say that Japanese troops are never made to retire, but retirements are always temporary. The cease-fire is normally sounded at the moment when the defender's counter-charge is meeting the assault, *i.e.*, when both sides are carrying out an offensive movement. When long retirements have to be made in continuous manœuvres, they are usually executed in the most perfunctory manner. As the pursuit is always vigorous, the rear guard soon finds itself "hung up." In such cases either the retiring troops march off ignoring artillery and other fire, or, if the situation is too absurd, a pause will be ordered by the Directing Staff in order to enable the retreat to continue.

The amazement of the foreign observer is deepened when he reflects that the whole of the Directing Staff and all officers present, except the youngest, know the effect produced by the fire of modern weapons from personal experience. He is tempted to remark that if infantry is really to be handled in this fashion it would be more effective, and cheaper, to arm it with spears than with magazine rifles.

Grand Manœuvres may be dismissed at once. They are scarcely training for war at all, except as regards the physical work required of all ranks and the administrative problems presented by the concentration and movement of large numbers of men. Grand Manœuvres give the troops the highly-valued privilege of working under the eye of the Emperor and maintain the personal connexion between the Army and the Throne. They also serve as an annual national military spectacle which allows the Japanese people to see the force for which it makes such heavy sacrifices.

What is the principle which inspires the conduct of Japanese manœuvres generally? Our Training and Manœuvre Regulations state (paragraph 2 (5)) that "moral force in modern war preponderates over physical force as greatly as formerly." The Japanese simply apply this text in an extreme form to the manœuvre ground. In effect they say "let us neglect material and technical questions, like the use of infantry supporting fire in the attack, and concentrate all our energy on the development of moral force—on teaching all ranks to close with the enemy as rapidly as possible, no matter what their losses may be. To do this we must sacrifice reality: but rather unreality on the manœuvre ground, even though it means a loss of technical efficiency, than a want of determination on the battle-

field." British officers may think that by unreal training in peace the Japanese are preparing surprises in war for their men which may themselves be disastrous to *moral*, but we must agree that their conception of the use of manœuvres is a bold one and gives full value to the difficult abstract factors, which we all admit to be of vital importance.

The remark is often heard that big manœuvres teach the men nothing. This statement is profoundly untrue: all manœuvres, whether of companies or of armies, teach everyone who takes part in them something, but it may very easily be something bad. Every time a man carries out a military (or, for that matter, any other) operation, his mind receives a definite impression. If he finds that forward movement is constantly demanded from him or, at least, that operations end in forward movement, he will form the habit of looking on the offensive as the natural and inevitable form of action. The reverse is also true. An extreme example, seen on an Indian field day, will be the best illustration of this statement. A battalion was practising retirement before a savage enemy in hilly country. An Indian non-commissioned officer was in charge of a piquet which held a position with a good field of fire. When attacked he at once withdrew his piquet, with disastrous results to the main body. He gave as his reason that he only had twenty men and saw a hundred coming against him. The man could fairly be blamed for his failure to appreciate what the situation required of him, but was there nothing in his previous training to account for such a collapse? The game, as he had often seen it played before on manœuvres, was that if you had twenty men and the enemy a hundred, a *sahib* eventually came up and told you to retire. It is also possible that on some other occasion he had been reprimanded for holding on too long and hampering a retirement. In other words, the resultant of the impressions he had received during many years as a sepoy and a non-commissioned officer did not make him regard a determined resistance as the ordinary course of action. The conclusion seems clear: that, especially when dealing with men of low mentality to whom habit is everything, it is most unsafe to disregard the effect produced on their minds by manœuvres, the primary object of which may be to train the higher commanders. Discretion, too, must be exercised in practising special operations, such as retirements before an inferior force, which are detrimental to *moral*. The importance of the moral aspect of all manœuvres, great or small, requires emphasising for two reasons. First, that our national temperament inclines us to disregard abstract considerations and to aim at material, visible, efficiency only, and secondly, that the evil effects of, so to call it, soulless training usually only become apparent in war.

When it is said that the principle inspiring Japanese manœuvres is the sacrifice of reality to the development of moral force, it is not meant that the men (none of whom, it must be remembered, fought in Manchuria) nor indeed all the officers understand that

their manœuvres are not a true image of war. The tendency to teach definite lessons at the expense of reality is, however, very marked. One example will suffice. Two batteries of mountain (unshielded) artillery came into action in the attack in the open under fire from a defending battery at 1,600 yards range and from four machine guns and 700 rifles at ranges varying from 600 to 900 yards. After firing for 5 minutes, they were ordered to withdraw their detachments under cover, but on the assault taking place they were permitted to re-open fire. A remark was made to a senior umpire to the effect that in war the batteries could never have fired a single round from the position which they took up. The answer was "yes, but we must teach the lesson that artillery must support assaulting infantry at all costs." The forward tactics of the artillery are largely due to the feeling that it is a disgrace to the gunners not to support the infantry closely and bear their share of the losses. At the beginning of the Russo-Japanese war the tendency of the artillery to fight at long ranges caused unfavourable comment from the infantry. To this feeling must be attributed the disinclination of the Japanese artillery to employ covered positions.

Japanese manœuvres only become unreal after the first shot is fired. Up to that point the approximation to war conditions is close enough. The physical strain on officers and men is very severe. Owing to late orders and early starts, staff officers and adjutants do not get an average of more than 2—3 hours' sleep at night. Regimental, brigade, divisional and grand manœuvres are in one period with a rest day between each set of manœuvres. It is noticeable that at the end of this period many officers have lost weight and are approaching a state of physical exhaustion. The policy, sometimes condemned in our service as that of making yourself uncomfortable when you needn't is consistently followed. The writer has a vivid recollection of a case in point. The regiment was practising close billeting. It is assumed that troops in close billets will often not receive their second-line transport in war. The officers' baggage, which was, in fact, stored in the next house, was therefore not issued and the night was spent sleeping (or more correctly failing to sleep owing to cold) on the bare floor. If tactical considerations require great physical exertions from the troops, the demand is made without hesitation. On one occasion it was noticed a regiment acting as advanced guard was ordered to double in order to forestall the enemy in seizing a position. The men, who were in serge, had already marched 23 miles, and during a portion of this march they had been stepping out. The day was hot and close, and the infantry of the advanced guard was compelled to move across the fields in order to leave the road clear for the artillery. Soon after the order to double was given, cases of heat-stroke began to occur. The movement was, however, carried out to the end. The men displayed the greatest determination and could be seen falling down in the ranks as they doubled. Twenty-one men were counted lying insensible in rear of the regiment.

The spirit of co-operation is very strongly developed. Japanese officers are always training their commands as parts of a big whole and practise the independent action of small units comparatively rarely. If only a small force is manœuvring, it will be assumed to be working with a larger one, *e.g.*, as a flank guard or advanced guard. An infantry regimental commander will represent a battery by flanks in order to teach co-operation with guns even when none are actually present. This tendency towards co-operation, the necessity for which is, of course, taught by regulations, seems to be mainly due to two reasons. First, the fact that the Japanese organization is permanent and that all the units of a division know each other well, and secondly, the character of the war experience of all the senior officers. After all, a man is more influenced by what he has experienced himself than by what he reads in books. Take an officer who was a company commander at Liao-yang and at Mukden. Now he is a battalion commander and is concentrating his energy on training his battalion to work as part of the great machine in similar conflicts. He realises that it is in the great battles that his command will justify its existence and will tend to look on training in independent, minor operations as a "side-show."

As regards unity in the higher command the predominance of the Choshu clan in the army must have a great effect. Among the great figures of the war, Prince Yamagata (Chief of the Staff at Tokio and the Emperor's principal military adviser), Kodama (Chief of the Staff in the field), Terauchi (Minister for War), Nogi, Hasegawa and Oshima were all members of this powerful clan. A large proportion of the Generals' list also belong to Choshu. The survival of "clan-rule," as the Japanese call it, is no doubt bad for the army in many obvious ways, *e.g.*, it, in practice, narrows the field of selection for the higher grades, but during the war the unity of feeling in the higher command was largely due to this clan sentiment. We can imagine that if, in the case, of a difficult and dangerous struggle, the Prime Minister in England, the Minister for War, some other powerful members of the Cabinet, the Commander-in-Chief in the field and several of his chief subordinates happened all to be college friends much friction would be saved in working. The parallel is incomplete as Japanese clan comradeship is much stronger than any bond we have in England.

*Esprit de corps*, so strong with us, is weaker in the Japanese army but covers a wider area. The unit is not the battery or the battalion but the regiment and, most of all, the army as a whole. It is curious to us to hear a Japanese officer frankly admit that the men of another regiment are superior to his own in, say, physical endurance. The explanation is, in part, to be found in the convention which compels the speaker to depreciate anything with which he has a personal connexion, for the sake of politeness, and in part to the feeling that the men of the other regiment are Japanese too and any glory they may have is the common property of all.



That, after all, is the dominant note. In whatever way we analyse Japanese *moral* we shall always come to the same conclusion that patriotism is the master-motive which over-rides and combines all the others. Nor is patriotism the monopoly of the fighting services. They indeed find their chief support in the fact that behind them stands the nation, in full sympathy with them and ready in peace to bear a crushing load of taxation and in war to face the necessary losses in men in order to maintain the vital interests of Japan.

## PRECIS OF FOREIGN MILITARY PAPERS.

*Voyenni Sbornik, No. 7, July 1911.*

### CAVALRY IN THE JAPANESE WAR.

The author discusses three cavalry raids which took place in this war, *viz.*, General Mishchenko's raid on Inkou, Colonel Gillenschmidt's raid on Hai-cheng, and General Mishchenko's raid on Fakumen. After describing the raids (details of which are too well known to need repetition here), he makes the following remarks:—Firstly, regarding General Mishchenko's raid on Inkou. The idea of a raid on such a large scale was good, and is one of the few examples during the war of the employment by the Russians of a large force of independent cavalry. But its results were *nil*. It failed in its main object, *i.e.*, to cut the Japanese communications, and did not even produce any moral effect. The main reasons for failure were—(1) very faulty organization, too much being improvised at the last moment; (2) the presence of 1,500 pack animals with the column, which decreased its mobility; (3) the absence of all secrecy. The raid had been discussed by the Russian staff for more than two months, so that the Japanese got to hear of it, and even General Oku warned his troops to be on the look-out for it. Preparations, such as the collection of transport, etc., were carried out so publicly that the Japanese had ample warning; (4) the main object of the raid was not correctly understood. General Kuropatkin pointed it out as being the destruction of Inkou, whereas it should have been the destruction of the railway. Troops were faultily disposed in consequence; (5) the raid, even if it had been successful, had no connection with the main Russian plan of operations; (6) General Mishchenko's hands were tied, in that he was not given a free hand in the organization of the raid, and General Kuropatkin quite wrongly gave him clear orders as to the locality where it was to be carried out, instead of leaving the choice of the exact spot to General Mishchenko.

The main faults in the actual carrying out of the raid were—bad and not sufficiently distant reconnaissance. No attempt was made to keep the direction secret, or to deceive the enemy. A direct, instead of a roundabout, route on Inkou was taken. The attacks which were carried out lacked suddenness and energy. During the attack on Inkou itself, the force detailed for the attack halted for 4 hours at a distance of only 10 versts (6½ miles) from Inkou, before commencing the attack, which gave the Japanese time to bring up two battalions by train. The retirement also was carried out slowly, and in this, of course, the column was hampered by its transport.

The raid carried out by Colonel Gillenschmidt, with 4 sotnias of Cossacks, with the object of blowing up one of the big railway bridges, must be considered the most successful of the whole war, both in its results and in its execution. On this occasion the column was formed with the greatest secrecy. The object of the raid was perfectly clear, and gave its commander an opportunity for the display of initiative, *i.e.*, in the selection of the actual bridge to be destroyed in a considerable extent of railway-line. The execution of the raid itself, as regards its direction, marching, mobility, and secrecy, is above reproach. In the vicinity of the enemy the column moved mostly at night, and off the roads. It also covered its tracks by a change of direction to the west from Sidyakoshen, and moved so quickly that it managed to avoid the Japanese patrols. During the long halt at Tava, from 4-30 A.M. to 7 P.M. on the 7th February, everything was done to ensure secrecy. The whole column was hidden away in four houses, and the village surrounded by dismounted sentries. The rate of marching for 5 days averaged 74 versts (nearly 50 miles) a day. In one day, including a fight and the blowing up of the bridge, 130 versts (86½ miles) were covered in 26 hours.

In General Mishchenko's raid on Fakumen, the object in view was to move round in rear of the western wing of the Japanese forces, and to prevent their assuming the offensive: also to destroy store depôts, transport, etc., and to tear up the railway-line. At the very outset, by choosing a wrong direction, the column went through a series of collisions with its own 7th Infantry Division with the Chunchuses, and also with the enemy's cavalry patrols. A new direction had to be decided on and three days were thus lost. There was again a total lack of secrecy, as the whole column concentrated almost in view of the Japanese. The rate of marching was extremely slow, being almost entirely at a walk, and averaged 35 versts (23½ miles) a day. Inter-communication was unsatisfactorily kept up, and reconnaissance so bad that the column was more than once drawn into unexpected engagements. On the 7th May three of these engagements took place, which were carried out without any regard to tactical considerations. So much artillery ammunition was expended that it eventually led to the abandonment of the raid, which was thus, so far as the achievement of its object was concerned, a complete fiasco.

#### THE FIELD DISCIPLINE OF CAVALRY.

The author of this article remarks that there have been many complaints lately in the press, and military circles generally, about the inefficiency of cavalry training, especially as regards reconnaissance. The Russian cavalry go in far too much for manœuvring in close order, and the author even says that a great part of them are trained to nothing else. The reason for bad reconnaissance, he considers, is the want of education in the ranks, and also the short period of service. He says that training in outpost reconnaissance work is generally good. The protective duties of cavalry on

the march are badly carried out, as also reconnoissance of dispositions and strength of hostile troops. The cavalry are not sufficiently practised in keeping touch with an enemy on the march, and reports on this head are nearly always unsatisfactory. In this respect training is carried on too much by lectures and maps. Various instances are given of corps going in too much for close order drill, riding-school displays, and also of attaching too much importance to the look of their horses : all this to the detriment of reconnoissance and field duties.

The author then says that military writers on cavalry matters at the present time go in too much for writing articles which are remarkable more from a literary, than a military, point of view, their actual contents being of secondary importance. Such articles are very popular now, and those dealing with questions of practical training very rarely appear.

The author condemns the system of inspection of horses at the end of manœuvres. He says that the more energetic squadron commanders, who work their commands harder and probably attain better tactical results during the actual manœuvres, are often badly reported on at the subsequent inspection, because their horses are not in such good physical condition as those of other squadron commanders who have not worked so hard or done so well.

The staff and commanders of all ranks do not give sufficiently clear and concise orders to cavalry during manœuvres and tactical exercises, especially regarding reconnoissance. There is a widespread ignorance of the rôle of cavalry among officers of other arms, because officers of other arms are never attached to cavalry regiments. The independent cavalry is interfered with too much on manœuvres and senior commanders give them far too many orders, which are quite impossible to carry out, thus tying their hands. Finally the author gives one or two instances of cavalry being directed on manœuvres by the staff in a very unpractical manner.



## CORRESPONDENCE.

### SUGGESTION FOR AN IMPROVEMENT IN MILITARY MAPS.

SIR,—The maps in Henderson's "Stonewall Jackson and the American Civil War" are unworthy of such an admirable and useful book. In the first place, they are in the text, instead of being separately contained in a pocket, so that the reader might have them spread out before him for reference as he reads. (In the copy of the work which I borrowed from the U. S. I. Library, some previous reader has torn out several of the maps: a reprehensible but not unnatural deed.) Secondly, they are uncoloured. Thirdly, the scale, in those relating to extended operations, is inconveniently small. It is to be hoped that in a future edition, even at the cost of a few shillings added to the price, these defects may be remedied.

The difficulties encountered in studying these maps have suggested to me an idea for a mechanical improvement in military maps, which is very likely to have occurred to others, but which I have never seen carried out, or referred to in print. If the thing has actually been tried, no doubt some reader of this Journal will let me know.

The map consists of two sheets, superimposed. The upper one is the map proper: the lower is arranged to move under it, either by revolving on a pivot or by a straight lateral motion. The latter arrangement would generally be the better: the direction of movement may be arranged to be either north and south or east and west to the map, as may be more convenient, according to the operations illustrated.

The upper sheet has small rectangular openings cut in it to represent bodies of troops. The lower and movable sheet is the same colour as the general surface colour of the map, but it has patches of the colours used to distinguish the armies. These patches are in such positions that as the lower sheet is moved they will successively appear through the openings in the upper sheet.

On the margin of the upper sheet is an index pointer. On the margin of the lower sheet, which projects slightly, is an index of the positions of troops at the moments which it is desired to illustrate, chronologically arranged from top to bottom or left to right, as the case may be. (This arrangement would probably have to be dispensed with if the movement of the lower sheet were circular.)

The lower sheet being stationary with one of the items of its index (say, '9 A.M., 15th') opposite the pointer on the margin of the upper sheet, the positions of the bodies of troops at that moment are seen. The other openings in the upper sheet do not catch the eye being filled by the surface colour of the lower sheet. Proceeding with his study of the action or operations, the reader moves the

lower sheet so that the next item of its index (say, '4 P.M., 15th') comes opposite the pointer. The openings previously representing the bodies of troops which had changed their position at the time stated, are now in their turn hidden, and the blocks of colour appear in fresh positions.

In large maps illustrating the movements of several armies over a theatre of war, it would be convenient to have more than one movable lower sheet. In large maps, again, which are kept permanently open, the movements of the lower sheet might be by means of a roller. In book-maps, the two sheets can be attached by means of paper-clips. In maps for frequent use, the openings may be backed with transparent material.

E. DAWSON, LIEUT.-COL.,  
*Moulmein Volunteer Rifles.*

## REVIEWS.

**Campaigns on the North-West Frontier.** By Captain H. L. Nevill, D.S.O., R.F.A. London: John Murray, 15s.

The author has set himself the somewhat ambitious task of giving a resumé of all operations undertaken against the tribes on the North-West Frontier since the British annexation of the Punjab. For purposes of comparison he divides these operations into two periods, taking the year 1890 as the dividing line on the grounds that a change in tribal tactics due to the introduction of arms of precision into their territory began to be apparent about that date. The date of the adoption of the Durand boundary in 1893 would possibly be a more appropriate division, as marking a distinct change in our relations with the tribes; a change, moreover, which was to some extent the cause of the extensive troubles of the next four years.

The accounts of the various operations are arranged in chronological order, and being taken from official accounts and other authentic sources need little comment. In describing important events, the author has adopted the plan of quoting *verbatim* from a recognised authority, thus very wisely refraining from furnishing us with a fresh version of what may, in some cases, be regarded as controversial incidents.

Though the accounts of the various incidents of tribal warfare are good reading, the chief interest of the book centres in the comments on the various campaigns described. These comments are fair and well thought out deductions, and the writer shows considerable acumen in picking out the leading features in each campaign. While avoiding the pitfall of destructive criticism and arguments on controversial points, he does not hesitate to point out where mistakes were made, and usually supports such criticism by references to Field Service Regulations. The reviews of the Mahsud Expedition of 1894-95 and the Tirah Expedition of 1897-98 are perhaps the best.

The table of precepts with references to paragraphs in Field Service Regulations, Part I, is also well thought out, and useful in emphasising the fact that our regulations are not merely the academical expression of opinions but are based on war experience.

The value of the offensive and dangers of inaction are duly considered throughout, and it is pleasing to find that nothing in the book conveys the idea, sometimes apparent in works of this subject, that the Pathan is such a "Terrible Turk" as regards fighting qualities. In this connection the author's remarks on page 318, to the effect that night work and scouting should not be looked on as the prerogatives of specially trained Gurkhas are worthy of attention. As the author is a gunner, we naturally look for some expression of



opinion on the use of artillery in the operations under reference. In this we are not disappointed, for the comments on the use and limitations of artillery in frontier warfare given on pages 352 and 353, as well as the remarks on the use of guns by night, are excellent. The last chapter, "In futuro," is hardly up to the standard of the rest of the book. While we may all agree that the advance of science must be utilised to the greatest degree possible to neutralise the ever-increasing power of the frontier tribes due to improvement in their armament, the arguments are laboured and the deductions somewhat inconclusive. In considering the use of air-vessels the author has hardly realised the limitations imposed by the terrain on their use. Admitting improvements, which will enable aviators to overcome successfully the atmospheric difficulties of mountainous regions, the question of landing-places remains, and the idea advanced on page 373 of an air-vessel landing a detachment on the rocky pinnacles in the vicinity of Dargai may be regarded as almost fantastic.

The author has wisely avoided the thorny question of politics as affecting operations, and as stated in the preface the work mainly deals with the tactical side of operations as affecting junior officers. There is, however, a strategical point which Captain Nevill has hardly brought sufficiently to notice. This is that in a campaign on the frontier, our fight is first with nature as represented by the terrain, and secondly with the inhabitants. Given the possibility of the use of wheeled traffic and a country furnishing moderate supplies, the opposition of the tribes would be a minor matter for our troops to overcome. It would be interesting if the next author on this subject would furnish us with a few statistics of the proportion of men actually engaged in any one action in a campaign to those employed beyond the border in guarding camps, convoys, etc.

On the whole, the book is well written and may be welcomed as an addition to the literature on the subject with which it deals.

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**The Japanese in Manchuria, 1904.** By Colonel E. L. V. Cordonnier, commanding 119th Infantry Regiment, French Army. Translated by Captain C. F. Atkinson. Vol. I—The Yalu and Te-li-ssu. London: Hugh Rees, 1912. 7s. 6d.

In 1910-11 Colonel Cordonnier, at one time a professor at the École Supérieure de Guerre, published a series of studies on the Russo-Japanese War in the *Revue d'Infanterie*. Part I of these studies has now been published in book form, and English readers are indebted to Captain Atkinson for a very painstaking translation of the work. Though the author's style is at times a trifle redundant for a historical study, his remarks are often illuminating and his arguments forceful, and the various situations are always put clearly and well before his readers. The opening chapters dealing with events previous to the war, a point too often neglected by the student, are of particular interest, and the imperative need for harmony between policy and strategy in peace time is well

shown. "When this harmony does not exist," says the author, and his words are full of significance, "when Policy wishes to impose its will on foreign nations without consenting to the sacrifices entailed by the provision of means sufficient to ensure the triumph of that will—then Policy is leading the nation to ruin." The difficulties that beset a Government in increasing its armaments are not forgotten, and we are reminded in another place how the Emperor William I. had to face undisguised discontent and opposition when creating the army which gave him the victories of Sadowa and Sedan. "Everywhere, in fact, public opinion clamours for the results and refuses the money. In Japan, popular as was the idea of war, four cabinets fell in three years because they demanded money to prepare for it." An interesting light is thrown on many of the events of the war by *verbatim* extracts from conversations and letters. For instance, with regard to the generally accepted idea that Sasulich suffered at the Yalu from the effects of trying to serve two masters—Kuropatkin, who ordered him to shun a decisive action, and Alexieff, who pressed him to offer a vigorous resistance—two interesting remarks are quoted which bear directly on this case, and serve to show the commander on the spot in a somewhat different light. On receipt of Kuropatkin's order to fight a rear-guard action, Sasulich is said to have ejaculated:—"His Majesty has made me a Knight of the Order of St. George, and I do not retreat." And again, after the battle, he is said to have remarked:—"I deplore these losses personally, but I do not repent of having *thought it my duty to decide upon fighting a superior adversary* (the italics are ours) so as to show him that we were not afraid of him, and to make him meditate seriously on what would happen to him when we should have assembled our forces."

It only remains to say that the maps which accompany the volume are clear and good, and that as regards the spelling of place-names the translator has wisely conformed to the British Official History of the War, thereby making it easy to read this interesting study in conjunction with our own official work.

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**Modern Artillery in the Field.** By Colonel H. A. Bethell (late R.A.). London: MacMillan & Co. Price 7s. 6d. net.

Those who are acquainted with Colonel Bethell's writing may be certain that any work from his pen is not lacking in thoroughness and interest. His new work is no exception. In it he has collated all such information as is likely to be of use to staff and regimental officers of all arms, while eliminating all obtrusive details of a technical nature. Comparisons are also drawn between the material organization and tactics of the British artillery and that of the leading foreign armies.

The book is divided into four parts. Part I deals with artillery material, and describes in detail the various natures of field artillery equipment at present in the service and their components. Part II,

Practical Gunnery, contains a description of the various natures of artillery fire, their uses, etc. Chapters are devoted to "Fire Discipline," "Entrenching" and a number of subjects of general practical utility. Part III deals with the Minor Tactics of Artillery, and Part IV with Combined Tactics.

Going more into detail, Chapter I contains a full and complete description of a modern Q.-F. gun. The principle of the independent line of sight, the system of differential recoil, and the latest types of sights, are clearly described and well illustrated. Chapter V, which deals with balloon guns, is most interesting and instructive, and though it takes the reader beyond the present scope of practical gunnery, it affords him ample food for reflection, and proves that the author is not content to confine his researches to existing conditions, but that he is prepared to dig and delve deeply into the gunnery problems of the future. Colonel Bethell divides balloon guns into two kinds—aero-naval guns for the armament of airships; and field balloon guns for engaging all natures of airships, kites, etc., from the ground. A brief but interesting description is given of the tactics of fighting dirigibles. This question is, however, more fully considered in the last chapter of the book. Chapter VII, on artillery draught, in addition to some useful hints on horse draught, contains much interesting information regarding the various means of mechanical traction in use at Home and on the Continent. Chapter X, on Fire Discipline, explains clearly and exhaustively the various principles included in this term. The numerous illustrations will greatly facilitate the work of the novice in following the procedure laid down in the letterpress.

The recent introduction of "Collective ranging," subsequent to the publication of this book, renders the consideration of the question of "ranging" incomplete. Colonel Bethell will no doubt take early steps to rectify this matter. Amendments, based on the Field Artillery Training Manual of 1912, to that excellent standard work by the same author, "Modern Guns and Gunnery," bringing that book up to date, are already on the market. This chapter terminates with a short description of the French and German methods of fire discipline.

Chapter XIII, Organization, opens with a short discussion on the proportion of artillery to infantry. This is followed by a brief description of the British Army organization and of our present artillery organization. The advantages and disadvantages of 4 and 6 gun batteries are briefly considered. Two minor points call for attention in this chapter, *i.e.*, the divisional ammunition columns now march 3 or 4 miles in rear of the main body of their respective divisions, and not a day's march in rear of the fighting troops, as hitherto. No mention is made of divisional ammunition columns pushing forward sections to form reserves at convenient points, some 2 miles in rear of the brigade ammunition column, when action becomes imminent.

The important question of reconnaissance is fully dealt with in Chapter XV, and includes remarks on reconnaissances made from

balloons, aeroplanes and kites. The formations adopted by the various natures of mobile artillery are described in Chapter XVIII. The division given for a mountain battery, though in accordance with the existing regulations, is not that generally adopted in India. Here it is customary, while manœuvring, to depart from the recognised division into 3 lines and to form a "firing battery" consisting of 5 gun and 2 ammunition mules per sub-section, the pioneer mules, wheel and axle mule, and one relief mule for axle, wheel, carriage, chase, breech and ammunition, full detachments, patrols, range-takers, signallers, look-out men and orderlies; and a second line consisting of the remainder of the battery, less the ordnance mules carrying baggage loads. The advantage claimed for this distribution of the battery is that it enables casualties to be more easily and more quickly replaced.

To approximate more closely with the formations adopted by horsed batteries of mobile artillery, and to facilitate the supply of ammunition to the guns, the establishment of a first line in addition to the firing battery, consisting of the six ammunition mules per sub-section now forming part of the second line, is worthy of consideration.

Chapter XIX is devoted to the consideration of artillery positions. The pros and cons of open and concealed positions are briefly discussed. Figures 114 and 116 give clear illustrations of the various kinds of artillery positions. In this connection it is interesting to note that the "semi-covered position" is reintroduced in the latest manual on Field Artillery Training.

Modern Q.-F. tactics are discussed in Chapter XX, and include a short summary of modern French and German artillery tactics, with a short criticism of the former methods. The remaining chapters deal with the action of artillery in various circumstances, the book terminating with a chapter on artillery in aero-naval warfare. *Modern Artillery in the Field* contains a great deal of general and practical information, so clearly and concisely compiled, that it is certain to prove a useful addition to the library of the expert as well as to that of the amateur. The paucity of good, clear, and concise works on artillery, in which all unnecessary technical details have been omitted, is much felt by all ranks of the three arms, and the publication of the present work will be generally welcomed.

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**Questions and Answers on Tactics.** By Captain J. Demangel, B.Sc., B.A. London: Forster Groom & Co. 5s.

A great evil arising from the present system of promotion examinations is the thoroughly unsound type of book which has been evolved with a view to giving candidates a "short cut" to the requisite knowledge required. Such a book is now before us in *Questions and Answers on Tactics*, in the preface of which we are told that it has been compiled with the avowed object of saving officers the trouble of studying Field Service Regulations and the training

manuals. The fact that this book has now reached its 13th edition would seem to show that it has met with a considerable amount of support, and we cannot too strongly impress upon officers how thoroughly impractical it is to work through this lengthy list of questions and answers instead of trying to assimilate the few bedrock principles so simply and clearly set forth in the various official books. It stands to reason that no matter how exhaustive (we had almost written 'exhausting') the list of questions may be, many hundreds of possible situations must be ignored; and in such a case the luckless officer, with no principles to guide him and no ready-made answer to quote, will be in sorry state indeed. If only officers would believe it, the official text-books will teach them all they require to know with half the labour involved by the study of a book like the one under review.

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**An Outline of the Russo-Japanese War.** By Colonel Charles Ross, D.S.O., *p.s.c.*, Vol. I—Up to and including Liao-Yang. London: MacMillan & Co. Price 10s. 6d. net.

Under the above unassuming title, Colonel Ross has just published one of the most interesting and instructive accounts of the war that we have yet seen. Taking as his motto that "In war one man is everything; the rest nothing," he has devoted himself largely to the human element, and by making a close study of the characters of the various commanders, the orders and instructions which they received and issued, and the numberless apparently unimportant facts which appear in biographies and reminiscences but seldom in a serious history, he often throws an entirely new light on the subject, and accounts for movements and beliefs which have hitherto appeared unaccountable. Speaking of the false order issued by Japanese Headquarters on 2nd June 1904, to the 1st and 4th armies, "to assume the offensive," and the consequent fears which this doubtless raised in Kuropatkin's mind when on the point of ordering Stackelburg south, he says: "It is this cunning utilisation of false information, accompanied by threats and demonstrations, and the effect of these on the nerves of the respective commanders, that constitute what is, practically, an unwritten history of war. It is this unwritten history of war, this play of wits between the hostile commanders, which constitutes the soul of the conduct of war. Eliminate it, and you have but a lay figure, the contemplation of which, though interesting, is neither very instructive nor of much value for our future guidance."

Colonel Ross believes strongly that Kuropatkin was right in his original wish to retire to Harbin, and that the detachment at the Yalu, and, later, the fighting at Telissu, were strategically wrong. "A detachment pushed forward at the commencement of a war," he aptly remarks, "is always a fruitful cause of ultimate defeat, yet we commonly see one pushed forward, under one pretence or another only to be destroyed or rough-handled. A common pretext

is that it is necessary to gain time.....The weaker or the unready force will always seek to gain time, even as the stronger or more ready will seek to deny time to its weaker adversary. The weaker side can hope to gain time either by pushing forward a detachment to delay the enemy, or by shifting the zone of concentration to a greater distance from the enemy. The latter course, no matter what difficulties it entails, is usually the wiser: the former is the one usually adopted. It is argued that the evacuation of territory will exercise an unfortunate influence on the population, or on the attitude of neutrals or subordinate races, or may jeopardise the security of the Government. It is forgotten that the defeat of the detachment will exercise a far more disastrous influence than the mere evacuation of territory which, if the main forces prove victorious, will merely be temporary."

The book has been written with scrupulous care, references being made to every available authority on the subject, and the result is a work which we can confidently commend to every student of the war, not only for its accuracy of detail and convincing argument, but also for the helpful and practical lessons which are deduced. Colonel Ross has, in short, added still further to the great reputation as a military writer which he gained by the publication of *Representative Government and War*, and the second volume of this brilliant book will be awaited with unusual interest.

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**The March: its Mechanism, Effects and Hygiene.** By Lieut.-Col. Patrick Hehir, I.M.S. Calcutta: Thacker Spink & Co.

This book is a reproduction and elaboration of lectures given to officers of the Lansdowne Garrison during recent years. The author begins by insisting on the extreme importance of efficiency in marching and quotes the Field Service Regulations of the German Army to the effect that "the march is the keystone of all operations." He points out that as a result of neglect of training in the Autumn Manœuvres of 1895 in a Division at Home, 835 men fell out on the march, but that since then regular and careful training has been adopted. Colonel Hehir goes somewhat fully into the physiology of the human body and the effects of exertion on the blood and internal organs. He shows that it is essential that physical training should be slow and progressive, that heart strain follows any attempt to "rush" it. That the exertion entailed by military service formerly frequently resulted in serious disease is a fact brought out by the invaliding of 2,000 men for affections of the heart from our European Army in India during a recent decade—200 invalids a year from heart affections alone! He confidently welcomes the publication of the Manual of "Physical Training for the Indian Army, 1911." The hardness of Japanese infantry is ascribed to the thorough system of physical training, even of very young children, undergone in the schools of Japan. The 1906 Aldershot observations of Dr. Pembrey of Guy's Hospital and Captain Parker, R.A.M.C., demonstrating

the increase of body temperature caused by marching are quoted, and prove the necessity for allowing men to open their jackets on the march. The distribution of the soldier's equipment so that the weights lie as near the centre of gravity of the body as possible and no straps go across the body above the waist-belt, is fully gone into. The bad effects of night marching and the extreme importance of a rigid system of sanitation in camping grounds are referred to. There is a section on the chief diseases and causes of inefficiency on a march, and the care of the feet by daily washing, and, if necessary, by the use of some simple drying powder is described. Alcohol and tobacco are, of course, vigorously condemned, and the periodical cleaning of water-bottles and the reasonable control of the desire of the soldier to imbibe large quantities of water on the march are advocated. The following sentence occurs at the conclusion of the book:—"The health of the force depends on the rigid observance of the sanitary precautions and rules laid down, and it is directly in proportion as commanding, medical, and other officers of units insist on such observances and devote personal attention to them that the troops will remain free from preventable disease."

The book is a good one, for though it contains nothing new or startling, it describes, in a clear and popular manner, those established sanitary facts (so important to the Army) which are very frequently forgotten or neglected.

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**The Napoleonic Campaign of 1805.** By Captain F. W. O. Maycock, D.S.O. London: Gale & Polden, 106 pp.

Captain Maycock has compiled a timely account of the Ulm and Austerlitz campaigns which should prove of value to officers working for promotion examinations. The book is of a distinctly higher standard than the ordinary crammer's epitome now so painfully familiar, and will form a useful framework on which to build a more extensive study of the campaign as time permits. Comments on the strategy and tactics of the opponents are sparingly given, the student generally being left to think these out for himself; but such criticisms as are offered seem sound and to the point. The maps and sketches are clear and adequate, but for facility of reference it would have been preferable to have had them in a pocket at the end, instead of scattered about the book.

# UNITED SERVICE INSTITUTION OF INDIA

OCTOBER 1912.

## SECRETARY'S NOTES.

### I. NEW MEMBERS.

The following members joined the Institution between 21st June and 4th September 1912 :—

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" P. F. Pope.  
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" E. G. T. Tuite-Dalton.

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Major P. H. Clutterbuck.  
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 " A. A. Chase.  
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 Colonel J. Christie, V.D.  
 Captain W. L. Bruce.  
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 2nd-Lieutenant E. L. Ricketts.  
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 " C. T. Marshall-Smith.  
 " M. J. N. Abbey.

opinion on the use of artillery in the operations under reference. In this we are not disappointed, for the comments on the use and limitations of artillery in frontier warfare given on pages 352 and 353, as well as the remarks on the use of guns by night, are excellent. The last chapter, "In futuro," is hardly up to the standard of the rest of the book. While we may all agree that the advance of science must be utilised to the greatest degree possible to neutralise the ever-increasing power of the frontier tribes due to improvement in their armament, the arguments are laboured and the deductions somewhat inconclusive. In considering the use of air-vessels the author has hardly realised the limitations imposed by the terrain on their use. Admitting improvements, which will enable aviators to overcome successfully the atmospheric difficulties of mountainous regions, the question of landing-places remains, and the idea advanced on page 373 of an air-vessel landing a detachment on the rocky pinnacles in the vicinity of Dargu may be regarded as almost fantastic.

The author has wisely avoided the thorny question of politics as affecting operations, and as stated in the preface the work mainly deals with the tactical side of operations as affecting junior officers. There is, however, a strategical point which Captain Nevill has hardly brought sufficiently to notice. This is that in a campaign on the frontier, our fight is first with nature as represented by the terrain, and secondly with the inhabitants. Given the possibility of the use of wheeled traffic and a country furnishing moderate supplies, the opposition of the tribes would be a minor matter for our troops to overcome. It would be interesting if the next author on this subject would furnish us with a few statistics of the proportion of men actually engaged in any one action in a campaign to those employed beyond the border in guarding camps, convoys, etc.

On the whole, the book is well written and may be welcomed as an addition to the literature on the subject with which it deals.

**The Japanese in Manchuria, 1904.** By Colonel E. L. V. Cordonnier, commanding 112th Infantry Regiment, French Army. Translated by Captain C. F. Atkinson. Vol. I—The Yalu and Te-li-ssu. London: Hugh Rees, 1912. 7s. 6d.

In 1910-11 Colonel Cordonnier, at one time a professor at the *École Supérieure de Guerre*, published a series of studies on the Russo-Japanese War in the *Revue d'Infanterie*. Part I of these studies has now been published in book form, and English readers are indebted to Captain Atkinson for a very painstaking translation of the work. Though the author's style is at times a little redundant for a historical study, his remarks are often illuminating and his arguments forceful, and the various situations are always put clearly and well before his readers. The opening chapters dealing with events previous to the war a point too often neglected by the student, are of particular interest, and the imperative need for harmony between policy and strategy in peace time is well

shown. "When this harmony does not exist," says the author, and his words are full of significance, "when Policy wishes to impose its will on foreign nations without consenting to the sacrifices entailed by the provision of means sufficient to ensure the triumph of that will—then Policy is leading the nation to ruin." The difficulties that beset a Government in increasing its armaments are not forgotten, and we are reminded in another place how the Emperor William I. had to face undisguised discontent and opposition when creating the army which gave him the victories of Sadowa and Sedan. "Everywhere, in fact, public opinion clamours for the results and refuses the money. In Japan, popular as was the idea of war, four cabinets fell in three years because they demanded money to prepare for it." An interesting light is thrown on many of the events of the war by *verbatim* extracts from conversations and letters. For instance, with regard to the generally accepted idea that Sasulich suffered at the Yalu from the effects of trying to serve two masters—Kuropatkin, who ordered him to shun a decisive action, and Alexieff, who pressed him to offer a vigorous resistance—two interesting remarks are quoted which bear directly on this case, and serve to show the commander on the spot in a somewhat different light. On receipt of Kuropatkin's order to fight a rear-guard action, Sasulich is said to have ejaculated:—"His Majesty has made me a Knight of the Order of St. George, and I do not retreat." And again, after the battle, he is said to have remarked:—"I deplore these losses personally, but I do not repent of having *thought it my duty to decide upon fighting a superior adversary* (the italics are ours) so as to show him that we were not afraid of him, and to make him meditate seriously on what would happen to him when we should have assembled our forces."

It only remains to say that the maps which accompany the volume are clear and good, and that as regards the spelling of place-names the translator has wisely conformed to the British Official History of the War, thereby making it easy to read this interesting study in conjunction with our own official work.

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**Modern Artillery in the Field.** By Colonel H. A. Bethell (late R.A.). London: MacMillan & Co. Price 7s. 6d. net.

Those who are acquainted with Colonel Bethell's writing may be certain that any work from his pen is not lacking in thoroughness and interest. His new work is no exception. In it he has collated all such information as is likely to be of use to staff and regimental officers of all arms, while eliminating all obtruse details of a technical nature. Comparisons are also drawn between the material organization and tactics of the British artillery and that of the leading foreign armies.

The book is divided into four parts. Part I deals with artillery material, and describes in detail the various natures of field artillery equipment at present in the service and their components. Part II,

Practical Gunnery, contains a description of the various natures of artillery fire, their uses, etc. Chapters are devoted to "Fire Discipline," "Entrenching" and a number of subjects of general practical utility. Part III deals with the Minor Tactics of Artillery, and Part IV with Combined Tactics.

Going more into detail, Chapter I contains a full and complete description of a modern Q-F. gun. The principle of the independent line of sight, the system of differential recoil, and the latest types of sights, are clearly described and well illustrated. Chapter V, which deals with balloon guns, is most interesting and instructive, and though it takes the reader beyond the present scope of practical gunnery, it affords him ample food for reflection, and proves that the author is not content to confine his researches to existing conditions, but that he is prepared to dig and delve deeply into the gunnery problems of the future. Colonel Bethell divides balloon guns into two kinds—acero-naval guns for the armament of airships; and field balloon guns for engaging all natures of airships, kites, etc., from the ground. A brief but interesting description is given of the tactics of fighting dirigibles. This question is, however, more fully considered in the last chapter of the book. Chapter VII, on artillery draught, in addition to some useful hints on horse draught, contains much interesting information regarding the various means of mechanical traction in use at Home and on the Continent. Chapter X, on Fire Discipline, explains clearly and exhaustively the various principles included in this term. The numerous illustrations will greatly facilitate the work of the novice in following the procedure laid down in the letterpress.

The recent introduction of "Collective ranging," subsequent to the publication of this book, renders the consideration of the question of "ranging" incomplete. Colonel Bethell will no doubt take early steps to rectify this matter. Amendments, based on the Field Artillery Training Manual of 1912, to that excellent standard work by the same author, "Modern Guns and Gunnery," bringing that book up to date, are already on the market. This chapter terminates with a short description of the French and German methods of fire discipline.

Chapter XIII, Organization, opens with a short discussion on the proportion of artillery to infantry. This is followed by a brief description of the British Army organization and of our present artillery organization. The advantages and disadvantages of 4 and 6 gun batteries are briefly considered. Two minor points call for attention in this chapter, i.e., the divisional ammunition columns now march 3 or 4 miles in rear of the main body of their respective divisions, and not a day's march in rear of the fighting troops, as hitherto. No mention is made of divisional ammunition columns pushing forward sections to form reserves at convenient points, some 2 miles in rear of the brigade ammunition column when action becomes imminent.

The important question of reconnaissance is fully dealt with in Chapter XV, and includes remarks on reconnaissance made from

balloons, aeroplanes and kites. The formations adopted by the various natures of mobile artillery are described in Chapter XVIII. The division given for a mountain battery, though in accordance with the existing regulations, is not that generally adopted in India. Here it is customary, while manœuvring, to depart from the recognised division into 3 lines and to form a "firing battery" consisting of 5 gun and 2 ammunition mules per sub-section, the pioneer mules, wheel and axle mule, and one relief mule for axle, wheel, carriage, chase, breech and ammunition, full detachments, patrols, range-takers, signallers, look-out men and orderlies; and a second line consisting of the remainder of the battery, less the ordnance mules carrying baggage loads. The advantage claimed for this distribution of the battery is that it enables casualties to be more easily and more quickly replaced.

To approximate more closely with the formations adopted by horsed batteries of mobile artillery, and to facilitate the supply of ammunition to the guns, the establishment of a first line in addition to the firing battery, consisting of the six ammunition mules per sub-section now forming part of the second line, is worthy of consideration.

Chapter XIX is devoted to the consideration of artillery positions. The pros and cons of open and concealed positions are briefly discussed. Figures 114 and 116 give clear illustrations of the various kinds of artillery positions. In this connection it is interesting to note that the "semi-covered position" is reintroduced in the latest manual on Field Artillery Training.

Modern Q.-F. tactics are discussed in Chapter XX, and include a short summary of modern French and German artillery tactics, with a short criticism of the former methods. The remaining chapters deal with the action of artillery in various circumstances, the book terminating with a chapter on artillery in aero-naval warfare. *Modern Artillery in the Field* contains a great deal of general and practical information, so clearly and concisely compiled, that it is certain to prove a useful addition to the library of the expert as well as to that of the amateur. The paucity of good, clear, and concise works on artillery, in which all unnecessary technical details have been omitted, is much felt by all ranks of the three arms, and the publication of the present work will be generally welcomed.

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**Questions and Answers on Tactics.** By Captain J. Demangel, B.Sc., B.A. London: Forster Groom & Co. 5s.

A great evil arising from the present system of promotion examinations is the thoroughly unsound type of book which has been evolved with a view to giving candidates a "short cut" to the requisite knowledge required. Such a book is now before us in *Questions and Answers on Tactics*, in the preface of which we are told that it has been compiled with the avowed object of saving officers the trouble of studying Field Service Regulations and the training

manuals. The fact that this book has now reached its 13th edition would seem to show that it has met with a considerable amount of support, and we cannot too strongly impress upon officers how thoroughly impractical it is to work through this lengthy list of questions and answers instead of trying to assimilate the few bedrock principles so simply and clearly set forth in the various official books. It stands to reason that no matter how exhaustive (we had almost written 'exhausting') the list of questions may be, many hundreds of possible situations must be ignored; and in such a case the luckless officer, with no principles to guide him and no ready-made answer to quote, will be in sorry state indeed. If only officers would believe it, the official text-books will teach them all they require to know with half the labour involved by the study of a book like the one under review.

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**An Outline of the Russo-Japanese War.** By Colonel Charles Ross, D.S.O., *p.s.c.*, Vol. I—Up to and including Liao-Yang. London: MacMillan & Co. Price 10s. 6d. net.

Under the above unassuming title, Colonel Ross has just published one of the most interesting and instructive accounts of the war that we have yet seen. Taking as his motto that "In war one man is everything; the rest nothing," he has devoted himself largely to the human element, and by making a close study of the characters of the various commanders, the orders and instructions which they received and issued, and the numberless apparently unimportant facts which appear in biographies and reminiscences but seldom in a serious history, he often throws an entirely new light on the subject, and accounts for movements and beliefs which have hitherto appeared unaccountable. Speaking of the false order issued by Japanese Headquarters on 2nd June 1904, to the 1st and 4th armies, "to assume the offensive," and the consequent fears which this doubtless raised in Kuropatkin's mind when on the point of ordering Stackelburg south, he says: "It is this cunning utilisation of false information, accompanied by threats and demonstrations, and the effect of these on the nerves of the respective commanders, that constitute what is, practically, an unwritten history of war. It is this unwritten history of war, this play of wits between the hostile commanders, which constitutes the soul of the conduct of war. Eliminate it, and you have but a lay figure, the contemplation of which, though interesting, is neither very instructive nor of much value for our future guidance."

Colonel Ross believes strongly that Kuropatkin was right in his original wish to retire to Harbin, and that the detachment at the Yalu, and, later, the fighting at Telissu, were strategically wrong. "A detachment pushed forward at the commencement of a war," he aptly remarks, "is always a fruitful cause of ultimate defeat, yet we commonly see one pushed forward, under one pretence or another only to be destroyed or rough-handled. A common pretext

is that it is necessary to gain time.....The weaker or the unready force will always seek to gain time, even as the stronger or more ready will seek to deny time to its weaker adversary. The weaker side can hope to gain time either by pushing forward a detachment to delay the enemy, or by shifting the zone of concentration to a greater distance from the enemy. The latter course, no matter what difficulties it entails, is usually the wiser: the former is the one usually adopted. It is argued that the evacuation of territory will exercise an unfortunate influence on the population, or on the attitude of neutrals or subordinate races, or may jeopardise the security of the Government. It is forgotten that the defeat of the detachment will exercise a far more disastrous influence than the mere evacuation of territory which, if the main forces prove victorious, will merely be temporary."

The book has been written with scrupulous care, references being made to every available authority on the subject, and the result is a work which we can confidently commend to every student of the war, not only for its accuracy of detail and convincing argument, but also for the helpful and practical lessons which are deduced. Colonel Ross has, in short, added still further to the great reputation as a military writer which he gained by the publication of *Representative Government and War*, and the second volume of this brilliant book will be awaited with unusual interest.

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**The March: its Mechanism, Effects and Hygiene.** By Lieut.-Col. Patrick Hehir, I.M.S. Calcutta: Thacker Spink & Co.

This book is a reproduction and elaboration of lectures given to officers of the Lansdowne Garrison during recent years. The author begins by insisting on the extreme importance of efficiency in marching and quotes the Field Service Regulations of the German Army to the effect that "the march is the keystone of all operations." He points out that as a result of neglect of training in the Autumn Manœuvres of 1895 in a Division at Home, 835 men fell out on the march, but that since then regular and careful training has been adopted. Colonel Hehir goes somewhat fully into the physiology of the human body and the effects of exertion on the blood and internal organs. He shows that it is essential that physical training should be slow and progressive, that heart strain follows any attempt to "rush" it. That the exertion entailed by military service formerly frequently resulted in serious disease is a fact brought out by the invaliding of 2,000 men for affections of the heart from our European Army in India during a recent decade—200 invalids a year from heart affections alone! He confidently welcomes the publication of the Manual of "Physical Training for the Indian Army, 1911." The hardiness of Japanese infantry is ascribed to the thorough system of physical training, even of very young children, undergone in the schools of Japan. The 1906 Aldershot observations of Dr. Pembrey of Guy's Hospital and Captain Parker, R.A.M.C., demonstrating



the increase of body temperature caused by marching are quoted, and prove the necessity for allowing men to open their jackets on the march. The distribution of the soldier's equipment so that the weights lie as near the centre of gravity of the body as possible and no straps go across the body above the waist-belt, is fully gone into. The bad effects of night marching and the extreme importance of a rigid system of sanitation in camping grounds are referred to. There is a section on the chief diseases and causes of inefficiency on a march, and the care of the feet by daily washing, and, if necessary, by the use of some simple drying powder is described. Alcohol and tobacco are, of course, vigorously condemned, and the periodical cleaning of water-bottles and the reasonable control of the desire of the soldier to imbibe large quantities of water on the march are advocated. The following sentence occurs at the conclusion of the book :—"The health of the force depends on the rigid observance of the sanitary precautions and rules laid down, and it is directly in proportion as commanding, medical, and other officers of units insist on such observances and devote personal attention to them that the troops will remain free from preventable disease."

The book is a good one, for though it contains nothing new or startling, it describes, in a clear and popular manner, those established sanitary facts (so important to the Army) which are very frequently forgotten or neglected.

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**The Napoleonic Campaign of 1805.** By Captain F. W. O. Maycock, D.S.O. London: Gale & Polden, 106 pp.

Captain Maycock has compiled a timely account of the Ulm and Austerlitz campaigns which should prove of value to officers working for promotion examinations. The book is of a distinctly higher standard than the ordinary crammer's epitome now so painfully familiar, and will form a useful framework on which to build a more extensive study of the campaign as time permits. Comments on the strategy and tactics of the opponents are sparingly given, the student generally being left to think these out for himself; but such criticisms as are offered seem sound and to the point. The maps and sketches are clear and adequate, but for facility of reference it would have been preferable to have had them in a pocket at the end, instead of scattered about the book.

# UNITED SERVICE INSTITUTION OF INDIA

OCTOBER 1912.

## SECRETARY'S NOTES.

### I. NEW MEMBERS.

The following members joined the Institution between 21st June and 4th September 1912 :—

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" P. F. Pope.  
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 " N. M. Adam.  
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 " E. F. V. Ventris.  
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 Captain L. Phillips.  
 Lieutenant G. N. Proctor.  
 " F. G. M. Wigley.  
 " T. S. Randall.  
 " E. A. R. Gore-Browne.  
 2nd-Lieutenant G. E. Burdakin.  
 Lieutenant W. L. Reid.  
 2nd-Lieut. H. H. Dean.  
 " H. W. Young.  
 Captain J. A. S. Daniell.  
 Lieutenant L. F. O'Brien.  
 " K. R. McCloudhlin.  
 " C. McD. Allardice.  
 Major A. H. Kane.  
 Lieutenant R. S. Wahab.  
 " A. A. Chase.  
 Major I. S. Browne.  
 Lieutenant R. M. Trail.  
 " W. B. Cunningham.  
 " M. H. Bickford.  
 Lieut.-Colonel G. A. Paterson, V.D.  
 " C. H. Richards.  
 Major E. S. Earle.  
 Colonel J. Christie, V.D.  
 Captain W. L. Bruce.  
 Lieutenant F. W. Reynolds.  
 2nd-Lieutenant E. L. Ricketts.  
 Lieutenant J. E. Murray.  
 " C. T. Marshall-Smith.  
 " M. J. N. Abbey.

Lieutenant B. Clerk.  
 Captain H. W. Rowlandson.  
 2nd-Lieutenant A. J. Lunn.  
 Captain M. M. Carpendale.  
 Lieutenant F. R. Farquhar.  
 " C. F. Cahusac.  
 " R. D. Owen Jones.  
 Captain F. E. W. Baldwin.  
 " J. C. Hathornthwaite.  
 " A. T. Sheringham.  
 Lieutenant E. T. T. Todd.  
 " E. H. B. Ozanne.  
 Major W. A. Light.  
 " J. McK. T. Hogg.  
 Lieutenant F. C. Richardson.  
 " R. C. Busher.  
 Captain E. F. Villiers, D.S.O.  
 " E. H. Lynch.  
 Lieutenant A. M. Kennedy.  
 " H. R. C. Meade.  
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 Major E. Paterson, D.S.O.  
 " C. R. Terrott.  
 Captain C. J. H. Lyster.  
 " H. H. Grigg.  
 Lieutenant N. Robertson-Glasgow.  
 Captain H. S. Stewart.  
 " A. H. R. Dodd.  
 " T. W. Kirkwood.  
 Lieutenant F. C. C. Yeats-Brown.  
 " E. G. Atkinson.  
 " I. D. Guthrie.  
 Captain J. T. C. Broadbent.  
 Lieutenant J. C. Wickham.  
 " D. McA. Hogg.  
 Colonel H. E. C. B. Nepean.  
 Captain G. E. Hardie.  
 " J. G. Rae.  
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 " W. Odell.  
 " R. Tilly.  
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 " R. T. Fellowes.  
 " F. W. L. Gull.  
 " R. O. Bridgeman.  
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 " D. Sandeman.  
 Lieutenant N. H. Prendergast.  
 " C. E. T. Erskine.

Lieutenant E. M. Murray.  
 " H. M. Hankin.  
 Captain W. W. Van Someren.  
 " J. E. Home.  
 " W. Ruel.  
 Major J. W. O'Dowda.  
 2nd-Lieutenant A. P. Rodgerson.  
 " R. T. Sweet.  
 Lieut.-Colonel S. R. L. White.  
 Major F. R. Dugan.  
 " G. H. J. Rooke.  
 Captain B. J. Jones.  
 Lieutenant E. H. M. de Stackpoole.  
 " S. R. Westmacott.  
 " E. L. L. Acton.  
 " T. D. Murray.  
 Captain G. R. Trefusis.  
 Lieutenant C. V. M. Bell.  
 Captain R. J. Stokes.  
 Lieut.-Colonel A. T. J. Lilly.  
 Major H. K. Palmer.  
 Captain J. W. Houston.  
 Lieut.-Colonel A. le G. Jacob.  
 Captain H. G. Turner.  
 Lieutenant C. H. Blackburn.  
 " E. P. Henderson.  
 " V. W. C. Moore-Lane.  
 " K. H. M. Davison.  
 2nd-Lieutenant N. L. St. P. Bunbury.  
 " G. L. G. Pollard.  
 " Aga Murtaza Khan.  
 Major C. C. Renton.  
 " F. Fisher.  
 " V. F. W. Tregear.  
 " W. E. Pye.  
 Captain J. P. Mitford.  
 " G. D. Wright.  
 " J. E. Carey.  
 2nd-Lieutenant E. R. C. Booth.  
 " P. d'A. Banks.  
 " C. D. Rawson.  
 Captain J. K. Gatacre.  
 Major R. Sparrow.  
 " J. E. F. Dyer.  
 " B. G. Clay.  
 Lieutenant F. J. Scott.  
 " D. Finlay.  
 " H. M. Singer.  
 " A. L. I. Friend.  
 " R. Noble.  
 " E. J. B. Hayes-Sadler.  
 Major F. S. Walker.  
 Captain W. F. R. Webb.  
 Lieutenant C. Leslie-Smith.  
 Lieut.-Colonel H. C. B. Dann.  
 Major E. R. I. Chitty.  
 " M. E. Nuttall.  
 " A. A. P. Waller.  
 Captain E. J. H. Haughton.  
 " M. E. C. V. S. Montieth.  
 Lieutenant G. G. Richardson.  
 " H. R. B. H. Irwin.  
 " K. F. Franks.  
 " C. A. Pogson.  
 " C. C. Langhorne.

Lieutenant C. H. G. H. Harvey-Kelly.  
 „ H. F. Belli-Bivar.  
 „ F. G. B. Wetherall.  
 2nd-Lieut. R. G. B. Cuddeford.  
 Major F. G. Pierce.  
 Captain C. P. F. Warton.  
 „ S. B. Coates.  
 Lieutenant H. J. Norman.  
 „ L. Hastings.  
 Captain T. T. Oakes.  
 Major H. W. Codrington.  
 Captain E. W. H. Marsh.  
 Lieutenant H. L. F. Falkland.  
 „ R. F. Clothier.  
 „ L. H. Jackson.  
 Captain H. W. Whitwell.  
 Lieutenant E. M. Little.  
 „ R. C. Garrett  
 Captain J. W. Hope.  
 „ R. Burgess.  
 „ W. P. Pearse.  
 Brigadier General S. G. U. Smith.  
 Lieutenant W. P. Moran.  
 „ J. P. Gulland.  
 „ J. R. Dill.  
 2nd.-Lieut. H. V. Gell.  
 Major P. H. Cunningham.  
 Captain J. A. Bean.  
 „ I. D. M. Hogg.  
 Lieutenant C. D. Rawson.  
 Major J. L. Alexander.  
 Lieutenant T. S. Jobson.  
 Captain A. D. Wise.  
 „ G. C. G. Maclean.  
 „ H. M. Butler.  
 „ F. H. James.  
 Lieutenant L. H. Mosse.  
 Lieut.-Colonel G. E. D. Elsmie.  
 Major F. W. C. Turner.  
 Captain J. S. McEwen.  
 „ C. A. C. Mackenzie.  
 Rear Admiral Sir A. E. Bethell.  
 Captain F. L. Bennett.  
 Lieutenant R. C. Lord.  
 „ H. G. Greswell.  
 Major G. G. Woods.  
 Lieut.-Col. H. de T. Phillips.  
 „ G. H. Colomb.  
 Major G. Rooke.  
 Lieutenant R. F. Atkins.  
 „ E. M. Mulliken.  
 Captain B. E. A. Manson.  
 Lieut.-Colonel W. T. Wright, A.D.-C.  
 Captain W. G. Longdin.  
 Surg.-Capt. O. C. Newall.  
 Lieutenant H. Hargreaves.  
 „ S. Acklom.  
 „ R. M. N. Forbes.

Major E. H. McB. Fenn.  
 Captain C. A. G. Shoubridge.  
 Lieutenant H. V. Budgen.  
 „ R. A. P. Grant.  
 Captain A. Gouldsmith.  
 Captain G. H. Impey  
 Lieutenant A. L. Thomson.  
 „ F. L. du Moulin  
 „ W. H. W. Apperley.  
 „ L. H. Lee.  
 2nd-Lieut. W. E. Pollard-Urquhart.  
 „ C. C. Malden.  
 „ W. Holderness.  
 „ C. C. Hawkes.  
 „ J. E. D. McElwaine.  
 „ H. E. Silver.  
 „ G. Watson.  
 „ J. G. Byrne  
 „ B. W. R. Reynolds.  
 „ E. H. Gray.  
 „ W. de L. Passy.  
 „ N. S. De Brath.  
 Major S. W. King  
 Captain the Hon'ble M. W. R. de Courcy.  
 Major A. B. A. Stewart.  
 „ Sir G. M. H. Stirling.  
 „ T. J. Williams  
 „ F. P. S. Dunsford.  
 Lieutenant C. D. Noyes.  
 Captain E. H. C. Brander.  
 „ C. Jarvis.  
 Lieutenant F. Oswald.  
 H. W. Biggie, Esquire.  
 Lieutenant F. B. Scott.  
 Captain G. S. Clarke.  
 Lieutenant H. R. Lawrence.  
 Lieut.-Col. C. C. Reilly.  
 Major H. Morrice.  
 Lieutenant C. A. Russell.  
 Captain H. W. Hamilton.  
 Lieutenant C. D. Berrington.  
 „ J. M. Bryant  
 Major C. C. Jackson  
 „ H. Ross.  
 Captain P. L. Hanbury.  
 Major F. D. Davidson.  
 Captain C. J. P. MacA. Grant.  
 „ H. E. Redman.  
 Lieutenant H. T. L. Hinde.  
 Captain G. M. Oldham.  
 Lieut.-Colonel N. E. Robin.  
 Captain W. G. Ayscough.  
 Lieutenant F. L. Roberts.  
 „ W. L. Harvey.  
 „ A. N. I. Lilly.  
 „ F. O. MacKenzie.  
 Captain W. A. Gover.  
 „ W. E. R. Williams.

## II. H. E. THE VICEROY.

H. E. the Viceroy and Lady Hardinge honoured the Institution by being present at the lectures given by Brigadier-General Braithwaite, Captain Massy, and Captain Twiss during the month of July 1912.

### III. U. S. I. MEDAL COLLECTION.

The medal collection of the United Service Institution has recently been re-arranged by Major Alban Wilson, who has also kindly presented a medal to the collection.

### IV. GOLD MEDAL ESSAY COMPETITION 1911-1912.

The Gold Medal for 1911-1912 has been awarded to Major B. C. Carter, The King's Regiment. Essays bearing the following mottoes were received:—"Every purpose is established by counsel" (Gold Medal); "And take heed unto yourselves," "Hoo," "Unity," "Dum spiro spero," "Non multa sed multum," and "Toujours Prest." The adjudicating officers were the Hon'ble Sir Reginald Craddock, K.C.S.I., Lieutenant-General Sir R. Scallon, K.C.I.E., C.B., D.S.O., Major-General H. B. B. Watkis, C. B., Major-General F. J. Aylmer, V.C., C.B., and Major-General C. St. L. Barter, C.V.O., C.B.

### V. GOLD MEDAL ESSAY COMPETITION 1912-1913.

The Council have selected the following as the subject for the Gold Medal Essay for 1912-13:—

"Examine the application of the main principles laid down in Field Service Regulations I, Chapter VII (The Battle), to the conditions of a campaign in a terrain similar to that of Baluchistan and Afghanistan, against an army organized on modern principles."

### VI. U. S. I. TROPHIES.

The Government of India have recently presented the United Service Institution with a handsome 9 pr. bronze Afghan (ram's-head) trophy gun, on a suitable carriage.

### VII. PRESENTATION OF GOLD MACGREGOR MEMORIAL MEDAL TO CAPTAIN PRITCHARD.

H. E. the Viceroy, as Patron of the United Service Institution, presented the special Gold MacGregor Memorial Medal to Captain B. E. A. Pritchard at the conclusion of Brigadier-General Braithwaite's lecture on 26th July.

In introducing the subject, H. E. the Commander-in-Chief spoke as follows:—Your Excellency, on behalf of the United Service Institution of India, I now beg to ask Your Excellency to be so kind as to present to Captain Pritchard, 83rd Wallajahad Light Infantry, the special gold MacGregor Memorial Medal which has been awarded to him by the Institution this year. Though Your Excellency is well aware of the journey made by Captain Pritchard, it is probably not so well known by many members of the audience, so with your permission I will give a few brief particulars. His actual journey was from Myitkyina, in Upper Burma, first due north and then west, to Hkampti, and thence to Sadiya in Assam. The country north of the Myitkyina district through which he passed is for some 300 miles not only unadministered, but was till this year practically an unknown land. Sixteen years ago a Lieutenant in the Royal Artillery named Pottinger explored it for a distance of some 150 miles, but owing to a murderous attack which was then made on his party by the tribesmen, in which two of his followers were killed and several others wounded, he was compelled to beat a hasty retreat. Last year a small portion of this region was visited, but of the rest, up to the

time of Captain Pritchard's journey, little was known except that it was inhabited by some people called Black Marus, and that it was a particularly wild and inhospitable country. As a sign of the tact which Captain Pritchard showed whilst among these people, I might mention that he was able to persuade the very man who had started the attack on Pottinger's party in 1896, to put him up for the period of his stay in that village, and to act as his guide for a large part of his subsequent journey. Among other tribes met with were the Lisus, a truculent people who murdered two German travellers who tried to explore their country a year or two ago.

The hardships which Captain Pritchard underwent on this remarkable journey were very great. At one time he was snowed up on a mountain range some 12,000 feet high, for several days and nights without shelter. He was abandoned by his coolies; he had to leave the greater part of his stores behind him; his feet were frost-bitten; and he eventually had to make several marches in his bare feet, carrying a load of 50 pounds on his own back. The second part of his journey, from the upper reaches of the Irrawaddy to the Brahmaputra in Assam, entailed travelling for weeks at a time through absolutely uninhabited jungle.

In conclusion I should say that the whole of the country traversed was mapped by the hardy Indian surveyor, by name Ram Pershad, who accompanied Captain Pritchard throughout.

I am sure that every one present will agree that, after this adventurous and valuable journey, Captain Pritchard has well deserved the medal which has been awarded to him

## VIII. MacGREGOR MEMORIAL MEDALS.

The following notification regarding the award of the MacGregor Memorial Medals is published for information :—

1. The MacGregor Memorial Medal was founded in 1888 as a memorial to the late Major-General Sir Charles MacGregor. The medals are awarded for the best military reconnaissances or journeys of exploration of the year.

2. The following awards are made annually in the month of May :—

(a) For officers, British or Indian, a silver medal.

(b) For soldiers, British or Indian, a silver medal, with Rs. 100 gratuity.

3. For specially valuable work a gold medal may be awarded in place of one of the silver medals, or in addition to the silver medals, whenever the administrator of the fund deem it desirable.

4. The award of medals is made by H. E. the Commander-in-Chief as Vice Patron and the Council of the United Service Institution, who were appointed administrators of the fund by the MacGregor Memorial Committee.

5. Only officers and soldiers belonging to the Army in India (including those in civil employ) are eligible for the award of this medal.\*

6. The medals may be worn in uniform by Indian soldiers on ceremonial parades suspended round the neck by the ribbon issued with the medal—(*vide* G.O.C.C., dated Simla, 20th December 1895).



## NOTE.

Personal risk to life during the reconnaissance or exploration is not a necessary qualification for the award of the medal ; but in the event of two journeys being of equal value, the man who has run the greater risk will be considered to have the greater claim to the reward.

\**N.B.*—The terms 'officer' and 'soldier' include those serving in the British and Indian armies and their reserves, also those serving in Auxiliary Forces such as the Volunteers, and corps under local Governments such as Frontier Militia, Levies, and Military Police.

**IX. TACTICAL SCHEMES.**

To assist officers studying tactics, tactical schemes are issued by the Council of the Institution, to members only, on the following terms :—

Rupees 5 per scheme, or Rs. 50 for a complete series of ten schemes, these charges including criticisms and solutions by a fully qualified officer selected by the Council.

Two sets of schemes (10 schemes in each series), revised to 1911, are now available, and an entirely new series (Series VI) is in process of preparation, of which eight problems are ready for issue.

A number will be allotted to each member applying for papers, and solutions must be sent under these numbers to the Secretary, United Service Institution of India, Simla.

**X. MILITARY HISTORY PAPERS.**

In order to assist candidates for the Staff Colleges, and other officers, in the study of military history, the Council of the Institution issue, to members only, sets of questions on selected campaigns. The following papers are now available :—

- (a) One sets of six questions on the Waterloo Campaign.
- (b) Two sets of six questions each on Callwell's Small Wars.
- (c) Two sets of six questions each on the strategy of the Russo-Japanese War.
- (d) Three sets of six questions each on the battles of the Russo-Japanese War.
- (e) Two sets of six questions on the Afghan War, 1879- 80.

The charge for these papers is Rs. 5 each, including criticism by fully qualified officers selected by the Council.

A number will be allotted to each member applying for papers, and solutions must be sent under these numbers to the Secretary, United Service Institution of India.

**XI. LIBRARY CATALOGUE.**

A library catalogue revised up to 1st October 1912 is now in the press, and will be ready for issue shortly. Members requiring a copy should kindly inform the Secretary.

Price of catalogue Re. 1, or Re. 1-4-0 by V.P.P.

**XII. INTELLIGENCE ESSAY COMPETITION.**

The special Intelligence Essay Competition has been won by Major D. Deane, 12th Cavalry, with an essay bearing the motto "*Pecuniam in loco negligere maximum est lucrum.*" Fourteen essays in all were received. The adjudicating officers were Colonel A. H. Bingley, C.I.E., General Staff ; Colonel F. A. Hoghton, 69th Punjabis, and Lieut.-Colonel G. de S. Barrow, 35th Scinde Horse. The essays sent in by Major H. A. Walker, 3rd Bn., Royal Fusiliers, and Captain Clementi Smith, 22nd Punjabis, were placed second and third respectively. The winning essay will be published in the Journal for January 1913.

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U. S. I. GOLD MEDAL ESSAY.\*

BY MAJOR B. C. CARTER, THE KING'S REGIMENT.

MOTTO.

"Every purpose is established by counsel; and with good advice make war."—(Proverbs 20, 18).

**Subject:—**"It appears to be generally recognised that the three principles of sea-command, self-defence and mutual support must be the basis of any sound system of Imperial Defence."—Discuss the responsibility of India in regard to the use of her existing military forces in giving effect to the above principles.

Before discussing the responsibilities of India in particular, we must assess the liabilities of the British Empire in general in this respect. In the first place (in spite of the sinister reputation of *la perfide Albion*) a war of aggression is entirely out of the question. We have no desire but to consolidate the Empire and to hold securely what we already possess. True we have within the

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\* The Council of the U. S. I. do not hold themselves responsible for the correctness of the facts stated in this essay, or for any opinions held by the writer

last few years defined our sphere of influence in Persia, which may, and probably will, lead to occupation and protection ; but it is sorely against our will, and only due to that inexorable law of Nature which ordains that nothing may stand still but must either advance or retrograde. The very last thing we wish is to see reproduced in Persia the rivalries of Clive and Dupleix in India. In some parts of the globe, however, our interests are bound to clash with those of other great powers, and we may examine them shortly.

A war with America and the consequent weakening of the English-speaking races would be hailed with delight by the other powers, and, if only on those grounds, such an event is happily most improbable. At the same time it is well to have a clear understanding with America, and in the words of Captain Mahon "We work together when mutual interest requires, but in accordance with well-understood conditions ; beyond that we stand clear of each other's business, knowing that misplaced meddling separates the closest friends." In other words we shall interfere just so much and no more than sound business compels.

At the present moment a war with Germany is being freely discussed in both countries, and we may find ourselves ranged with France (and perhaps Russia) against the Triple Alliance, or some variation of this in which Germany may be reckoned on to play the leading part. Apart from land and naval warfare in Europe, Africa is the chief scene of conflicting interests between ourselves and Germany, and our most vulnerable point in that continent is undoubtedly Egypt.

On looking eastward we find another expanding nation—Japan, and the Chinese Empire which is in the throes of a revolution the end of which is hard to see. Australia and British Columbia lie open and inviting, though their legislation forbids, for all practical purposes, the entrance of either Japanese or Chinese. Any aggression, however, on the part of Japan in this direction would doubtless bring the United States into the field as a counter-balancing power, and at present Japan is not in a position to provoke so formidable a combination. Chinese aggression, though partaking more of the nature of a policy of pin-pricks than one of national importance, may become a nuisance which pressure on Peking, diplomatic or even military, may not suffice to abate. This nuisance would be felt on the Indian frontier, for Chinese pretensions include Nepal, Burma, Siam, and in fact all the frontier States.

Finally we have the Russian menace on the north-west frontier, combined with the possibility of complications with Afghanistan and trouble with the border tribes ; and thus we see that the liabilities of the empire lie in every quarter of the globe. This brings us at once to the first consideration of sea-command.

Sea-command and sea-power are two terms used somewhat indiscriminately in discussion, whereas they are actually two distinct although cognate things. Whilst a sea-power may be any nation that can put warships on the sea, sea-power in the sense now

applied to it means the naval power of a State as opposed to its military power, and includes everything tending to enhance the naval strength of that State such as naval bases, coaling stations, and docks at vital points. It also implies the capabilities of that State to conduct over-sea expeditions as opposed to raids, meaning thereby that it is able to keep open its lines of communications whilst carrying out offensive operations in a country other than its own. "England," says Captain Mahon, "having undoubtedly reached the greatest height of sea-power of any modern nation, the action of her government.....in general direction.....has been consistent. It has aimed steadily at control of the sea." In fact the fixed intention of the nation has always been to obtain and hold command of the sea at any cost. This policy still holds good, and it is abundantly clear that anything short of naval victory, complete and overwhelming, means serious danger if not absolute disaster to the empire. It is imperative then for England to have command of the sea in the event of war, and to keep it.

Command of the sea may be summarised as the power of the navy, in time of war to carry out its three duties :—

- (1) To prevent invasion.
- (2) To protect our commerce.
- (3) To keep open our lines of communications throughout the empire.

It is attained by the defeat of the hostile fleets at sea or blockading them in their ports, but, as Captain Mahon points out, no command of the sea, however complete, can guarantee immunity from attacks on commerce and lines of communication, or from raids on important strategic points. Raids have seldom, if ever, had any real effect on the ultimate issue of a campaign, but they are troublesome and damaging and should be obstructed or guarded against so long as the steps taken do not interfere with the main object in view. We may assume, in the course of this study, that the component parts of the empire are agreed on the general line of action, and it remains to decide how far India in particular is called upon to assist in keeping open these lines of communication. If the navy is to do its work, the more important naval bases and secondary bases established to meet the particular requirements of the moment must be defended by garrisons of regular troops. It is impossible to be more explicit on that point in an essay, but by a glance at the map we soon see what points may be said to lie within India's sphere of influence. There are three lines converging towards the south-west corner of Australia :—

- (1) From India itself.
- (2) From the Red Sea.
- (3) *Via* the Cape of Good Hope.

There are also coaling stations at Aden, Seychelles, Chagos Islands, Mauritius, and Singapore. Of these, judging by past experience, the most important point would appear to be Mauritius. In spite of having command of the sea, we lost (I quote Dr. Miller

Maguire) 1,475 merchant vessels between 1795—97, whilst the French held Mauritius, and continued to lose them until we captured the place in 1810. We now find the French established in Madagascar and the Germans in German East Africa. Delagoa Bay is admittedly a strategic point of the first importance, as also is Walfisch Bay on the west coast, and these points will have to be strongly held. Delagoa Bay does not belong to us, though we have the first refusal of it, but in great wars such considerations "go by the board" and we should certainly have to secure it. The rights of neutrals, in such circumstances, are considered just so much as their powers of enforcing them are evident. Whether the garrisons will be found from South Africa or India will depend on the troops available at the time and the possible hostile troops that can be brought to those points.

In the days when we were building up the empire and consolidating our power, we attacked and captured many places only to give them back to their original owners when peace was re-established. For instance, in the treaty of peace signed at Versailles in 1785, Great Britain received back all the West Indian Islands she had lost, whilst restoring the French stations in India, including Trincomalee. It is an accepted principle now that all the available strength of a State will be concentrated for the decisive encounter which is to decide the real issue of the war. Consequently, when we have made secure important strategical points as above, any fighting that may take place in other localities will be a matter of no moment. Any adjustment of territory in Africa or elsewhere would be finally settled after the war and as the price of peace. The futility of misdirected effort is well exemplified to-day in the Italian occupation of Tripoli. Italy has expended some 100,000 good troops and utterly estranged the inhabitants of a place which she could have acquired without firing a shot in the locality. Though Turkey is helpless as regards Tripoli, owing to her want of warships, Italy is no further advanced towards peace, and the expedition must be costing her a great deal more money than she cares to spend. Thus it becomes clear that the only outlying places which we should be justified in attacking are the important naval bases of the enemy whilst carefully guarding our own.

For many years past all naval commanders have insisted that over-sea expeditions should be accompanied by a proper proportion of land troops, and in these days of scientific fighting the necessity is even more apparent, for whilst navies are highly important for the protection of commerce and lines of communication, their efficiency against coast defences and coasting trade has diminished. The first because a naval commander must conserve his strength to meet the hostile fleet, and the second because the increase of railways makes it possible to convey goods inland. We can certainly point to a good many failures in joint expeditions, but they are generally traceable, not to professional jealousy as is usually supposed, but to want of practice and experience in working the two arms together.

Turning again to the map, we see that Egypt is the key to India, entirely dominating the Red Sea route. The strategic points of importance are Malta, Cyprus, and Aden, whilst Gibraltar holds open the western gate of the Mediterranean. Malta and Aden are held by us: Cyprus nominally belongs to Turkey, though we have twice annexed it, chiefly in connection with Asia Minor, of which more presently. In 1798 the French sent a large expedition, which was successfully landed in Egypt, as an avowed threat against our Indian possessions. This is a further example showing on the one hand that command of the sea does not necessarily forbid over-sea expeditions to the enemy, and on the other that communications to be of any value must be kept open. In this case, when the covering French fleet was destroyed by Nelson, the fate of the army was sealed and in due course it surrendered. Since those days the value of Egypt has vastly increased, and even its temporary occupation by a hostile force would have a very unsettling effect on India, quite apart from the blocking of the Suez Canal, which in itself would be sufficiently serious. In 1798 the French landed 30,000 men, and, in passing, we may note that the Italian expeditionary force in Tripoli was originally of the same number. Egypt has not much to fear from the Italian occupation of Tripoli for many years to come. The chief danger from the land side lies in a Turkish advance through Asia Minor and Syria, which brings us to a consideration of what is called the Baghdad railway question. This may be looked on from two points of view. One as a possible (though the completion is probably remote) over-land route to India, and the other as a direct menace to Egypt.

Our policy in Asia Minor has always been vacillating, though it would seem that the time has now come for us to show what our intentions really are. Our hesitation is easily understood. We have laid ourselves out to keep buffer states between ourselves and Russia, and with that object we encouraged German interest in Asia Minor. This was all very well until we found ourselves in competition with Germany, who began to show unusual interest in Turkey. Dr. Paul Rohrbach, a well-known German political writer, makes no secret of the intentions of Germany, whom he describes as desirous of creating in Turkey a weapon of defence or rather counter-attack against England. Hence our present policy of placing obstacles in the way of Germany. But as far back as 1903 Mr. Balfour remarked that "whatever course English financiers may take, and whatever course the English Government may pursue, sooner or later this great undertaking will be carried out," and there is little doubt that the railway will be made, for German interests and money are too deeply involved to allow of any other course. The only question is how far are we to be concerned in it?

The expression "spheres of influence" with regard to Turkey has so far been avoided, but in Asia Minor it has practically become *un fait accompli* by the recent agreement between Russia and

Germany, which appears to have been made with scant consideration for Turkish views on the subject. Our own agreement with Russia has definitely committed us to a similar sphere of influence in Persia, which was probably considered more from the point of view of defence than of the actual trade, present or future, with Persia itself. There was indeed a considerable outcry at the time, on account of our trading losses.

In a paper read by Lieutenant-Colonel Yate before the Central Asian Society on the 8th February 1911, he said: "Although various schemes have from time to time been put forward for connecting Europe by rail with India, these have all now been concentrated in three main railway systems, all of which will, I think, in process of time be completed. These are—

- (1) The railway from Constantinople *viâ* Konia, Adana, and Baghdad to Koweit.
- (2) The railway from Baku across Persia and Baluchistan to a junction with the North-Western State Railway of India.
- (3) A line connecting Russian Turkestan through Afghanistan with the north-west frontier of India."

Now it stands to reason that those who build railways intend to control them, and with the railways almost of necessity goes control of the surrounding country. No. 2, we may observe, is to pass through Ispahan, which is within the Russian sphere of influence, and thence *viâ* Yezd and Kerman to Nushki, the terminus of our own line. Whatever may be the value of these lines from a commercial point of view, it is evident that, strategically, they are a menace to us, since we have no aggressive policy in the regions which they cover.

Regarded as a menace to Egypt we see that this railway brings the Turkish army directly on to the Syrian frontier. It is not likely that Turkey would undertake the conquest of Egypt single-handed, but as an ally of Germany it is easy to see what the threat of such a movement would mean to us. Nevertheless an advance through Syria would still be a serious undertaking for Turkey so long as the command of the sea remained in our hands, because the only possible route for an invading army lies along the coast. This difficulty is illustrated by Muhammad Ali's campaigns against Turkey in 1833—39. When he decided to throw down the gauntlet to Sultan Mahmud he despatched his son Ibrahim to invade Syria at the head of 40,000 men. The Egyptian navy held command of the sea practically unmolested by the Turks and helped materially in the siege of Acre which was eventually captured. Ibrahim Pasha then turned northwards and defeated the Turkish army at Homs. He then, having established an advanced base on the shores of the gulf of Alexandretta (which place is now leased to the Germans), crossed the Taurus range and, moving forward into Anatolia, gained a complete and overwhelming victory at Konia. The road to Constantinople now lay open before the victorious Egyptian, and Mahmud, in his dire distress, after failing to gain the sympathy of the British,

turned to Russia for help. The appearance of Russian naval and military forces in the Bosphorus put an end to the campaign, and Ibrahim withdrew. In 1839 Turkey again declared war and advanced into Syria, only to be once more signally defeated at Nezib whilst the Turkish navy deserted *en bloc* to the Egyptians at Alexandria. This time the powers (with the exception of France) decided to intervene to save Turkey, and the command of the sea passed to them. After a brief resistance Muhammad Ali realised his helpless position and submitted to the demands made by the powers, which included the restoration of the Turkish fleet. In these two campaigns the advance of the Egyptians was made secure by sea-command and rendered impossible as soon as that command was lost.

At the same time command of the sea alone is not sufficient to safeguard Egypt. Muhammad Ali was able to put 40,000 well-disciplined troops into the field as well. The British Government in their usual happy-go-lucky way have elected to take over a country extending from the shores of the Mediterranean to the Victoria Nyanza, and from the Red Sea to the very heart of Africa, leaving the proverbial "corporal's guard" to hold it. The Egyptian army of the present day, although of excellent material, is barely sufficient to police the Sudan alone. In 1903 the British Government asked for a Sudanese battalion for service in Somaliland, but the Sirdar, Sir Reginald Wingate, very rightly replied that he had not a single battalion to spare even though peace reigned throughout the Anglo-Egyptian Sudan at the time. Perhaps "an interval of peace" would be a more accurate description with regard to a country in the transition stage of the Sudan, in which there have been at least three "little wars" during the last five years and another is in progress at the moment of writing. The "beat" of this police force is a wide one and its responsibilities great. On the west is that mysterious Senussi sect reckoning some three millions of adherents in Northern Africa. We know little of their religious sentiments, and in all probability they are equally intent on slave-dealing and slave-owning. They are reputed to be especially numerous in Wadai on the borders of Darfur, which is nominally under Egyptian rule. Wadai itself is now French territory. Although, too, the prosperity of the country has increased by leaps and bounds since the fall of Khartoum, the Arab who formerly ruled the country is far from being reconciled to the rôle of peaceful cultivator which is being forced on him, and the Sudanese black ever was and still remains a born warrior. Wine and women he worships with the ardour of Omar Khayyam, whilst his primeval soul hankers after fighting with the whole-heartedness of the proverbial Irishman.

In addition to these possibilities, Abyssinia on the south-east frontier must always be a source of anxiety in time of unrest. The people have shown their fighting capabilities on their own ground, and the Italians will not easily forget the disastrous day of Adowa



It is not many years since French and Russian agents were active in that country, and comparatively recently King Menelek put a stop to the export of Abyssinian mules (which were being bought in considerable numbers by the Sudan Government) because he feared that they might be employed against him. An invasion of Abyssinia from the Sudan would be too big an enterprise for the Egyptian army unaided, and even on the defensive they would be fully occupied in keeping the border intact. In these circumstances I think it is clear that for all her liabilities, Egypt can rely on nothing more than the present British garrison for defence, with what reinforcements we can send her. In the event of Mediterranean complications these reinforcements would have to come from India supplemented perhaps from the Cape and Australia.

As regards the Suez Canal, under the terms of the Convention of 1888, it was agreed by practically all the powers that the canal should always be open both in peace and in war, to merchant or war vessels without distinction. The Egyptian Government is authorised to see that this order is made good, and, in case of difficulty, is to call upon the Imperial Ottoman Government for assistance. With such safeguards we should perhaps throw all fears to the winds, but considering the vital importance of the canal to us, it would probably be just as well to look to the matter on our own account in the event of war. As a matter of fact a blocking vessel has been blown up with dynamite without damaging the banks, but an intentional blocking would doubtless be a more serious obstacle.

We can now turn to a consideration of the danger of Russian aggression. No doubt the War Offices on either side have out-and-dried schemes of attack and defence ready at a moment's notice. Nevertheless, returning once more to the map, it is easy to see that Russia is constantly moving forward to the sea (*i.e.*, to the warm water ports) in three directions : -

- (1) On the west through Asia Minor and Constantinople to the Mediterranean.
- (2) To the south through Persia and India.
- (3) On the east through China to the Pacific.

By her agreement with Germany she is practically debarred from Asia Minor, and the seizure of Constantinople is outside practical politics as matters stand at present. Her march through Chinese territory was brought to an abrupt conclusion on the eve of success by the intervention of Japan. Russia is more oriental than occidental, and is therefore patiently consistent, and her ambitions in this direction though checked are certainly not abandoned. Whilst engaged in this scheme her intentions towards India were held in abeyance, but now we see her renewed activity in Persia. Her tenacity of purpose is illustrated by the struggle for the Caucasus which was continued for forty-eight years. The famous Schamyl, though he held out for twenty-four years, was compelled to surrender at last.

By the Anglo-Afghan treaty signed at Kabul in 1905 we confirmed our promise to defend Afghan territory against aggression, and we could hardly blame the Amir if he invited us to defend his northern border under that agreement. We have also, in our efforts to keep Persia a buffer state, more than once supported her with men and money against Russia with small profit to ourselves. The various agreements and subsequent wars have resulted in the present "spheres of influence" and an announcement on our part that we have no particular interests in Southern Persia. "It is the logic of facts," said General Sobelev, Chief of the Asiatic Department of the Russian Staff, "that the Hindu Kush, the natural boundary of India, should shortly form the frontier of Russia and that the Province of Herat should fall into Russia's hand." The logic of facts also makes it perfectly clear that Russia has not spent the past three centuries in conquering and absorbing the comparatively valueless Central Asian states to stop short at India except by force of arms. She has been all these years on the march, and a few more or less will make no difference. The struggle is bound to come. India enjoys with Canada the doubtful privilege of being the only portion of the empire (remembering that Egypt is still officially a protectorate) that can be invaded by land, and the historic lines of invasion have always lain in the north-west. The 1,200 miles of frontier from Karachi to the Pamirs are the source of danger to-day.

An advance against India would naturally be a serious undertaking and a lengthy process involving more than one campaign. To consider it from the point of view of a local operation in the general scheme of a war against the British Empire it would probably be carried out in three moves:—

- (1) An advance on to the frontier slopes of the Hindu Kush and the occupation of Herat and the Mazar-i-Sharif.
- (2) The forcing of the barrier of the Hindu Kush, combined with a turning movement towards Seistan. This would mean the occupation of Kabul and the line of the Helmund.
- (3) A final advance to the line of the Indus.

The local defence might be on any of these three lines, since a violation of Afghan territory would be sufficient justification for a declaration of war. The present distribution of our forces makes it evident that we do not intend to abide by Lord Lawrence's dictum—"The winning side will be the one who refrains from entangling himself in the barren mountain passes which now separate the two empires"; and, as the fight will be to a finish, and one in which we must put forth our whole strength, it will make no difference, in the event of defeat, whether we are defeated on the banks of the Helmund or the Indus. On the other hand, both in view of our treaty obligations and our prestige, there is every reason for giving battle as far forward as possible. The policy of Afghanistan and in fact that of the whole

border may be summed up in three words, "Back the winner," and the defeated army will find itself in a parlous state indeed, while the lines of communication of both will have to be strongly guarded from the beginning.

The Russians start with the advantage in that they have already defeated and taken provinces from Persia in despite of our assistance, and have occupied Afghan territory in the same way. The penalty of resistance to Russia is exemplified in the massacre of the garrison of Goek-Tepe in 1881, and probably tradition still keeps alive the story of how Ivan the Terrible took Kasan and put to death the whole male population in 1552.

Closely connected with any disturbance in Afghanistan is the question of the frontier tribes—irresponsible, reckless, and as incomprehensible as Lord Dalling's Turkish official, of whom he wrote: "When you wish to know what a Turkish official is likely to do, first consider what it would be to his interest to do; next what any other men would do under similar circumstances; and thirdly, what everyone expects him to do. When you have ascertained all these, you are so far advanced on your road that you may be perfectly certain he will not adopt any of these courses." On August 17th, 1897, the Commissioner of Peshawar telegraphed to Simla "I am watching events in the Afridi-Orakzai country very carefully from this side, and all my reports from reliable sources say that up to date there is no serious or general movement either among the Orakzais or Afridis." Yet on the day before, 11,500 men had started from Bagh in Tirah to attack the Khaibar.\* These frontier tribes number somewhere about 300,000 fighting men armed with rifles, mostly serviceable, and with plenty of ammunition. Major MacMunn in the Army Review of January 1912 puts the situation in a few words: "At the entrance to the two great highways from Hindustan to Afghanistan and Central Asia stand two divisions of the Imperial Army. Between the two highways of the Khaibar and the Bolan-Pishin road stand the three frontier brigades. Their duty is not to move up any of the great highways but merely to cover the border and support the Militia in time of peace, and in times of trouble to keep things in order while the field army is engaged elsewhere.....They resemble in principle the coast defence troops of the United Kingdom in being confined to the rôle of local defence and action."

An Egyptian officer once explained to the writer that India is looked on as a *Dar-el-Islam* and not as a *Dar-el-Harb*, i.e., a Muhammadan country and therefore not one against which a *jihad* or holy war can be proclaimed. That may be so, but in the event of war with Afghanistan or Turkey he would be a bold man who would say that a proclamation of *jihad* would not be taken up with enthusiasm. We have the best authority for saying that "the strong man armed" must first keep his own house in order, and that brings us to consider what effect a big war would have on the natives of India. From

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\* Imperial Strategy, page 325.

the days of Alexander and Timurlane, India has been conquered by the sword and held by the sword, and there is no reason to suppose that it will be otherwise in the future.

There is little doubt that the natives no more look on the British rule as a permanency than any other government that has gone before it. Only a few years ago probably more than half the natives (who gave the matter a thought at all) were firmly convinced that the end of the British *raj* was at hand. It had been prophesied and that was sufficient. The credulity of the native mind and the blind confidence that asks for no proof of good faith is a source of perpetual wonder, though perhaps not incomprehensible to those who are familiar with its counterpart in the peasantry of Ireland and Southern Europe. Fortunately, however, they were content to leave the matter to some mysterious process of "Allah," "Kismet," or whatever happened to be their own particular brand of philosophy, and there it ended.

No doubt the methods of British government are sound in the main, but one who has been in close personal contact with orientals, both in and out of India, may be forgiven for doubting the wisdom of the present policy of conciliating the native. The oriental wants to rule or to be ruled, and for him there is no half-way house. As far as internal risings are concerned, so long as the Indian Army remains loyal (which there seems little reason to doubt), these may be treated with contempt. Though there may be some local disorder and an unpleasant time for Europeans outside cantonments, the present scheme of "flying columns" and obligatory garrisons, supported by the police and volunteers, may be relied on to administer the proverbial "whiff of grape-shot" or its modern equivalent in sufficient and convincing qualities. But at the same time it seems a pity and quite unnecessary; for the people as a whole are satisfied and inoffensive, and the trouble is made by agitators who will stand clear when the matter is taken seriously. After all it is only the story of Irish Home Rule repeated, with the probable addition of the "grape-shot" in India. It is, however, necessary to understand the situation and the consequences. We assert the equality of all men and frankly deny ourselves any rights as the conquering nation. That being an accepted fact, we cannot blame the natives who clamour for equal place and power subject solely to the test of intellectual competition as holds good in England to-day, and it needs no great prescience to see that in the near future practically the whole government of the country will be in the hands of the natives. How long after that will India remain subject to the British Crown? Even at this moment England is giving India an object-lesson in how to assert her power by combination. A general strike against Europeans would do no harm to India but would destroy the Government almost at once; and if the power were already in the hands of native rulers it would simply drive every white man out of the country provided always that he could get out. That is the logical sequel to our present attitude towards

the natives. There can be no compromise in the light of past history.

It is easy to see the danger that threatens from the north and its accompanying complications, and it is not difficult to point to the most suitable lines for the local defensive. But it is a principle of war that to assume the defensive attitude without intending to counter-attack is to court disaster. This is where the difficulty lies. We have acknowledged a sphere of influence in Persia, but words without deeds have ever been useless in the face of a determined enemy. To hold Persia, even against Turkey (which is a far easier problem than against Russia), the force would have to be found by India. The conditions would be that this force must be strong enough to reach a definite objective and sufficient to brush aside or defeat all opposition. When we consider that it is admitted that, to meet an Afghan war complicated by possible conflict with the border tribes, we should require to mobilize the whole army of India as it stands constituted to-day, we are bound to admit that, when it comes to deeds and not words, the only course open to us is to abandon Persia, holding only just so much of it as will safeguard our left flank, and our present declared sphere of influence seems to meet these requirements. The Persian Gulf and littoral is a different matter. At sea, here as everywhere else, it is imperative that we shall be all powerful. Having abandoned Persia and taken up a defensive position in Afghanistan we begin to realise that this situation is merely a phase in the larger operations of war. The responsibility of India so far as Russian aggression is concerned is merely one of passive but effective resistance. A victorious campaign is out of the question. Beyond the Russian army in the field we have no objective to gain and everything to lose. The counterstroke, then, must be delivered by the empire in some other theatre of war and is no concern of ours, or at least the conception of it is not. The demands of India in the event of war with Russia were given us by Mr. Balfour. He told us that "Lord Kitchener's view is that, in addition to drafts, there should be available in the relatively early stages of the war, which, if it is to be conclusive, must certainly be a very long one, eight divisions of infantry and other corresponding arms."\* That was written in 1906 and the conditions remain much the same to-day. This force, I repeat, is merely the holding force acting on the defensive whilst waiting for the empire to deliver its counter-attack in some suitable direction.

On the northern and eastern borders we have to deal ultimately with China, though the result of the revolution now in progress may be a series of independent states instead of one central authority. In the former case we may look forward to some years of unrest on those borders until the various states have realised their limitations. This will necessitate a considerable increase in the border garrisons and a clear understanding that we shall permit no encroachment.

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\* Imperial Strategy, page 131.

With regard to China herself our chief concern is to preserve the *status quo* and to maintain our trading predominance in the Yangtse valley. We have permission to extend the Burma railway into Yunnan, to connect it with Ching Kiang on the Yangtse river, and if the reported discovery of valuable minerals in Upper Burma prove well founded, the construction of this railway may be appreciably hastened.

Some years ago we definitely stated that we meant to safeguard our merchants and traders by keeping what troops we thought necessary on the river between Ichang and its mouth.\* It seems probable, however, we shall have to keep our trade by peaceful means or not at all so long as China remains unpartitioned. The international jealousies aroused at the mere mention of such a thing were too bitter to be repeated. Any pressure brought to bear on China, for some time to come at any rate, will have to be an international affair in which a due proportion of Indian troops will again appear, and the fact of its being international will make it a local affair not affecting larger considerations.

So far I have not considered a sort of "Willcocks week-end war" between England and any possible enemy, though that is by no means impossible. In such a case India could only stand by as a spectator powerless to intervene. In the event of a Franco-German war with their respective allies, it seems probable that one great and decisive battle will be fought on the Franco-German frontier as soon as mobilization is completed, and that means in about a fortnight from the declaration of war. In the same way a German invasion of England to be successful must be swift and irresistible. The London money market is controlled by a mob of cosmopolitan financiers, of no particular nationality and devoid of patriotism, whose interests lie equally in Paris, Berlin, or New York. Their chief consideration would be to get the war finished at any cost rather than dislocate their markets. How far these same financiers share the responsibility for the South African war with "that blessed word" suzerainty will perhaps never be accurately known, but all their interests lie in a speedy termination to any war and the proximity of the struggle would give them the necessary leverage.

Money is however, not everything even yet, and if British supremacy is seriously challenged we may hope that the nation will rise to the occasion and give Lord Haldane's Territorials the six months' breathing-space he so confidently anticipates, to enable them to take the field as something better than Gambetta's levies. In that case India must be prepared to take her share in the defence of empire. That England would engage in a war of aggression is out of the bounds of possibility, and that all possible and probable enemies will coalesce to assail her is a consummation devoutly to be unwished.

We may now summarise India's responsibility in a few words :—

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\* Speech in the House of Commons by Mr. St. John Brodrick in 1899.

1. She may be called upon to subdue internal risings and at the same time hold the border in check and defeat a serious attempt at invasion through Persia and the north-west frontier. Such an invasion could only be carried out after long and careful preparation during which time arrangements could be made for reinforcements from England or the Colonies. The question arises as to whether the present army of India is sufficient for these requirements and we may agree that it is. That is to say that it is amply sufficient to meet all the first requirements of such a campaign and give time for the empire to collect and put forth her strength.

2. She may be called upon to furnish garrisons for important strategic points within her sphere of influence, or provide over-sea expeditions against similar points belonging to the enemy. This would enable England to concentrate every available man for the main effort at the decisive point.

3. She may be called upon to defend Egypt against any possible attack from outside and thus keep open the line of communications vital to her own existence and with it that of the empire.

It is only possible for India to bear these responsibilities if she is prepared to use her Indian troops as freely as her British against all-comers, and this she should unhesitatingly do, backed by Mr. Chamberlain's plain-spoken intimation to the world in general at the time of the South African war. It is also an absolute necessity that we should rule India entirely by the right of the sword. Even now many people affirm that, within a month of our sustaining any defeat severe enough to be recognised as a defeat in the Indian bazaars, insurrection would follow, not in favour of any particular nation but simply with the object of getting the white man out of the country. That may be open to question, but there can be no question that, with power in the hands of natives, the possibility of combined and successful insurrection will be largely increased, and the danger is too real to be incurred at the bidding of irresponsible socialists and clamorous babus. In the event of (1) as above, every available man would be needed in the country, and outlying garrisons would have to be found by the Colonies. It may be accepted that native troops do best in their own country since they are not as capable of standing change of climate as our own men. Consequently if there is any choice in the matter they should be employed at home.

Expeditions over-sea against an enemy's bases would imply that sea-command had been established and therefore would be carried out leisurely and in comparative safety. Unless India were preparing to meet Russian invasion, which would mean the mobilization of the army of India for home defence, she could easily provide the troops necessary, just as she furnished troops for China.

The defence of Egypt is a serious consideration, and to discuss it in detail is beyond the scope of an essay. We have seen that Muhammad Ali with 40,000 native troops, well trained and under a competent commander, was able to defeat any Turkish army that took the field. Also judging from the French invasion in 1798 and the

Italian expedition of to-day, the first instalment of an expeditionary force may be reckoned at somewhere about 30,000 men of all arms. As I said above, although we do not count on the navy entirely to prevent raids, we may confidently expect them to prevent reinforcements being brought across in any appreciable numbers. A campaign in Egypt, as in India, would come under the head of "the local defensive" in the general scheme, since we should have no objective beyond the enemy's forces in the field and no object beyond the integrity of Egypt. Therefore we may estimate that a complete division landed in Egypt, with a second division mobilized in India and ready to move, would suffice. The line of communication would be secure, and when we see the want of success of the Italian expedition in the face of some 10,000 Turks backed by a friendly country it is a fair assumption that a well-found and well-trained Indian division would more than hold its own. It may be argued that Egypt is not a friendly country towards us, but as a matter of fact it is in the same category as India or Ireland, that is to say, the ill-feeling is confined to the professional agitators whilst the mass of the people are indifferent so long as they themselves are not interfered with. Egypt, though she could give little assistance in the way of fighting troops, could provide a large proportion of transport, which is the one weak point in our Indian establishment. Camels in Cairo carry a load of ten maunds, but these are large heavy beasts that require watering as much as horses. The desert camels, which are regularly bought in Berber, are more suitable, though they only carry half that load. The great advantage would be that they would be working in their own country. The Egyptian Army has a system of reserves which would be able to supply a fair number of disciplined men (after making up their own regiments to war strength) who could be employed on transport duty. A comparatively large number of these men have already some knowledge of the work, though they have the usual oriental indifference to the sufferings of animals. But the Egyptian soldier is, *par excellence*, the man for hard physical work. Of powerful physique and inured to labour in the fields, he could be employed in making entrenchments, roads, railways, and so forth. In fact, in the writer's opinion, two or three battalions of Egyptian pioneers would be a far more useful asset to a force detailed for the defence of Egypt than double the number of fighting troops of the same material. Such battalions do not yet exist in the Egyptian Army, with the exception of an analogous railway battalion. They are not needed when the regular regiments are in themselves potential pioneer battalions, but from an imperial point of view two or three such regiments, scientifically trained and properly officered, would be a welcome addition to their counterpart in the Indian Army.

It is a fair question to ask definitely "What would India do in the event of a war with Germany, and what would she do for money, since the Mediterranean would, at first, be manifestly unsafe in



view of possible complications?" The answer to the first seems to be that England must guard herself, leaving India to look after herself and Egypt until the course of the war begins to take shape. As regards money, we may bear in mind that India under our protection must be a far wealthier country than it was in the days of John Company. That the hoarding instinct is as strong as ever may be judged from the continual shipments of gold which are advertised in the papers and which regularly go out of circulation. Money then can be found in plenty in the country, very literally "in"—since most of it will be found underground. The probabilities are that the owners will endeavour to keep it concealed as they use to do in the old days. Well—"Necessity knows no law" and we must invoke the right of the sword again.

"The good old rule... the simple plan  
That they should take who have the power  
And they should keep who can."

We need not adhere to the old rule in its entirety in these more civilised times. We can record what we have taken and eventually pay a fair price for it, but in the first instance (especially if India has any doubt as to the ultimate issue of the war) we shall be well advised to take what we want and take quickly.

In short the responsibility of India may be summed up as, first, her duty to herself, in which she keeps her own house in order and holds her borders intact, even against Russia, until England is able to intervene; secondly, her duty towards her neighbour, to the extent of despatching certainly one, and possibly two, complete divisions to Egypt, leaving England to deal the counter-stroke with such help as the Colonies are able to render.

The advantage of having a complete homogeneous force from India rather than a mixed force from various parts of the empire does not need demonstration. I assumed in the earlier part of this essay that the component parts of the empire were agreed on a general line of action, but it is evident that at present, with the exception of India, no part is in a position to lend efficient aid in the necessary counter-attack, and each one is far more concerned in arranging for its own local defence. One can hardly cavil at their following the first law of nature, but they, too, will have to take charge of their respective spheres of influence and eventually take over the naval stations and imperial garrisons in their parts of the world. The writer recently read (but cannot recall the author of) an article suggesting that France should reinforce her army against Germany with 100,000 black troops from Africa. Although we cannot deny that the principle of using native troops is sound, it is still an extreme example, and shows to what lengths some Frenchmen are prepared to go in defence of their country. Nevertheless, in the writer's opinion, unless the Senegalese are very much superior to our own Sudanese blacks (which there is no reason to suppose) these 100,000 blacks would be a source of weakness rather than strength in the fighting line, and their introduction into the country might be fraught with the

gravest consequences to the countryside, French or German. On the other hand there seems to be no reason why, granting the combined French and British navies to be supreme in the Mediterranean, 100,000 Colonial and Indian troops should not be landed in France with the same object. The question does not seem to have been considered up to date, perhaps for the simple reason that the Colonial troops fitted for the business are not yet "in being;" but it is a question well worth consideration though somewhat beyond the purport of this essay.

In conclusion we may ask one more definite question, though an exact answer, based on general premises only, can hardly be made. What number of troops can India, under the most favourable circumstances, send abroad to meet Imperial necessities? The British troops in India remain for all practical purposes rather under than over the strength laid down and approved by successive authorities as necessary for the maintenance of our supremacy in the country; nevertheless we cannot expect to keep this force locked up in the country under any and all circumstances. The conditions have altered greatly—in some respects favourably, in others unfavourably. Railways have been built and extended, and friendly relations established (whatever their value may be) with Russia and Afghanistan. On the other hand the border tribes are far better armed with modern rifles and ammunition.

I have said that two divisions might be called for for the defence of Egypt. Would it be possible to send away a third or even a fourth division? It would be a risky thing to do, but risks, and sometimes desperate risks, must be taken in great wars. The Northern Army comprises five divisions of which two are required for the border; the Southern Army has four divisions, and from this army the over-sea expeditions must be formed and at any rate replaced. In emergency the Northern Army must be prepared to safeguard India with perhaps one division in the south in support of the various police and volunteer forces called out. We must remember that India has always been dominated by a few resolute men with incomparably less efficient forces than stand at our disposal to-day. It is the resolute men that we want, not in the Army itself for there are plenty and to spare, but at the head of affairs. Resolute men and a resolute policy, which brings us back again to the song of the sword. If India is to be securely held and at the same time to take her proper share in Imperial war, we must adopt a saner and more robust policy towards the natives than the magnanimous or timorous (accordingly as it is viewed through British or native spectacles) policy of to-day.



## THE INTERDEPENDENCE OF STRATEGY AND POLICY

By Brigadier-General Walter Braithwaite, C.B., General  
Staff; Commandant, Staff College, Quetta,

on Friday, 26th July 1912.

Field-Marshal Lord Nicholson, G.C.B., in the chair.

**THE CHAIRMAN:** Your Excellency, Your Honour, Ladies and Gentlemen,—It is my pleasant duty to introduce to you General Braithwaite who is going to deliver a lecture on the interdependence of strategy and policy. I say it is a pleasant duty because General Braithwaite has served with me at the War Office and I have reason to be grateful to him for his valuable support and assistance there. He first entered the Army in the Somerset Light Infantry; since then he has been General Staff Officer and on the Camberley Staff. Since then he has been occupied at the important post of Commandant of the Quetta Staff College. From his experience and training I am sure we may look forward to a most interesting and valuable lecture.

**THE LECTURER:** No one who studies the history of past campaigns can fail to be struck with the immense, I might almost say the preponderating, influence exerted on the strategy of a campaign by the policy which that strategy was designed to consummate. For strategy—sound strategy—is, or should be, based on the political object of a campaign, *i.e.*, on the purpose for which the war has been faced.

All soldiers are well acquainted with such phrases as—"War is an instrument of policy;" "War is the weapon of the statesman;" "The soldier is the servant of the statesman;" "War is a political means to a political end". And there is a principle of strategy to the effect that "Politics and strategy must be in harmony."

Perhaps we know these phrases so well that their very familiarity has caused us to forget their real significance.

The latest revise of our Field Service Regulations—which contains our doctrine of war, opens with the following:—"War is the ultimate resource of policy by which the nation seeks to impose its will on its enemies in defence of its honour, its interests, and its existence. The armed forces of the empire are the instruments by which in the last resource the national policy is supported and enforced. The strength of the military forces to be maintained in peace or mobilized for war is therefore a matter of policy, for which His Majesty's Government, or the Government of the self-governing

Dominion concerned, are responsible." There is not much ambiguity about that.

If we really know that war is an instrument of policy then we must surely realise that "war can never be separated from political intercourse," and that the fact of diplomatic relations being broken off does not put an end to political relations between nations and Governments.

Granted that war is called into being through the political intercourse of Governments and nations, it is not the case that such intercourse is broken off by war, but rather that, as Clausewitz assures us, "war is nothing but a continuation of political intercourse with a mixture of other means."

In its essence, this political intercourse continues to exist in the general features of policy which run all through the war until peace reigns once more.

To quote Clausewitz once again "Is not war merely another kind of writing and language for political thoughts. It has certainly a grammar of its own, but its logic is not peculiar to itself."

If, then, we are right in saying that war belongs to policy, it naturally follows that war will borrow its character from that policy. If the policy be grand and powerful, so will also be the conduct of the war. "Upon policy the whole general condition, the temper, the constitution, the moral and physical vigour of a State depend, and upon these elements, again, the manner of making war."—(Von der Goltz.)

We must remember that policy must be taken to mean the representation of the interests generally of a whole community. We must divorce from our minds all that "politics" has gradually grown to convey to us. Instead of politics, therefore, let us talk of policy, and instead of politicians let us talk of statesmen. They are very different things!

The first question which naturally presents itself to us in considering this question is: In framing plans for a war, should the political point of view give way to a purely military point of view, or should the political remain the ruling point of view and the military view become subordinate to it?

I will quote Clausewitz once more:

"The subordination of the political point of view to the military would be contrary to common sense, for policy has declared the war; it is the intelligent faculty; war only the instrument. The subordination of the military point of view to the political is, therefore, the only thing which is possible."

"The art of war is policy, but, no doubt, a policy which fights battles, instead of writing notes."

I doubt whether—so far—anyone who has studied the subject will disagree with me. I have based my arguments on the writings of the most profound of all the writers on war—Clausewitz.

And yet I have found, in my experience, that this relationship of strategy and policy is a stumbling block to many. The influence

of policy on war is not generally understood. We constantly hear allusion made to "the evils of civilian interference." There are such evils and, when they occur, they are evils indeed. I will offer some examples for your consideration later on. But I am inclined to think that "civilian interference" is generally confused with the "control" which every Government has the right to exercise over its war policy.

This confusion of ideas is generally expressed as follows:—

"Once war begins, statesmen must not be allowed to interfere."

That view is an impossible one. War being an act of policy, initiated and controlled by the Government, it follows that—to quarrel with words—interference is clearly the wrong word to use. Nor is it only the expression "interference" which is wrong; the whole conception of the sentence is false.

Let us consider, for a moment the duties of the statesman and of the strategist. (I use the word "strategist" for want of a better, but I mean of course the individual, or the individuals, who are responsible for the guiding, controlling, setting in motion and keeping in efficiency the whole military machine.)

Sound strategy is based on the political object of a campaign, *i.e.*, on the purpose for which the war has been faced.

The statesman, in shaping the foreign policy of his country, will not (or ought not to) lose sight of the limitations imposed on that policy by the capacity of the naval and military forces; he will, if he be prudent, take good care that the war standard of those forces is adequate to support his policy.

This shows the necessity for the statesman and strategist to be in close touch with each other during peace.

The strategist has to remember that the scale of war preparation he desires to make "depends on the willingness and financial ability of the nation to meet the demands on its manhood and material resources which such preparation entails." And on those points it is the statesman, and not the strategist, who is the best judge.

Broadly speaking, the statesman decides on the policy to be adopted, after due consultation with the strategist as to the naval and military liabilities involved.

May I now give you some examples, from history, on the interdependence of strategy and policy, which will illustrate how great commanders have recognised the controlling hand of policy, and the happy results which have accrued when policy and strategy really have been in harmony.

I take 1866 and 1870 and, to a certain extent, compare them, and the procedure adopted. Then 1862, because that campaign is most often quoted to support the "interference" theory. Finally, 1904, to show, not so much the want of harmony during a war or immediately preceding it, but as an example of the failure, on the one side, to recognise this interdependence, and the result; and, on the other side, the careful creation of this harmony through years of national self-sacrifice; and the result.

I quote these particular campaigns because they are amongst those now under study at the Staff College. But there are others. These are, however, sufficient for our purpose.

First let us take 1866.

In 1866 we know that Moltke's plan was nearly ruined by the Prussian Government. The military point of view—which von Moltke urges so strongly in his projects—was that it was of the utmost importance that the Prussian Army should be concentrated in such a position as to enable it to cross the frontier immediately war was declared. The political situation was so strained that the Government thought it of even greater importance to prevent the enemy from setting foot on any single point of Prussian territory. In consequence, the army was dispersed instead of being concentrated, and the ultimate offensive became a difficult and hazardous enterprise.

What did Moltke do? Did he talk about the evils of civilian interference? Well, Moltke was "a man silent in seven languages" and we don't even know what he thought. But what he did is on record. He urged on the Government the military needs of the situation and he pointed out the dangers of delay. He took care that the Government was made fully cognisant of the probable military results of delay. That was his duty as the servant of the Government. But he had another duty. He had to gauge what effect his representations would have on the Government, and he had to be prepared to modify his original plan if his representations were without effect, so as to bring policy and strategy into harmony. He realised to the full the Government's right of control and had foreseen the possibility, if not the probability, of this control. This action of von Moltke is one of the great lessons for the soldier to lay to heart in this connection.

In 1870, the action of the Prussian Government gives us a lesson. Perhaps it had learnt to trust its strategist.

Moltke's original plan was to assemble the German armies on the western frontier. He thought that the French, owing to inferiority in numbers, and to their being but half prepared, would assemble on the Moselle. But, as we know, the French hastened forward, half mobilized, to the Saar.

Excitement in Germany was great, and there were not wanting those who counselled the despatch of available troops to protect the provinces between the Saar and the Rhine. But Moltke became as deaf as he was silent. He had foreseen every contingency, his plans received the support of his Government, and the German Army detained on the Rhine instead of on the Saar.

Contrast this with the action of the French Government, later on in the war, which sent MacMahon on one of the maddest enterprises ever undertaken by a civilised State.

MacMahon acknowledged the Government's right of control, and obeyed its orders, after a certain amount of protest, but Sedan was the result.

The French official account maintains that MacMahon would have been justified in disobeying, and certainly, the political state of affairs must be taken into account; [it will be remembered that the Emperor of the French, Napoleon III, was actually with MacMahon] and this act of the Provincial Government (*c.f.* with action of Russia regarding the premature relief of Port Arthur) is the nearest approach to justification of labelling a Government's action "interference" that I know of.

It was, we may confidently say, unwise use of control, and it defeated its own ends.

But we, as soldiers, cannot often be qualified to judge on matters of policy. Governments have to consider popular feeling in their own, and in other countries. Victory is no doubt the surest way to get popular feeling on your side, to discourage possible enemies, and hearten hesitating allies. Unfortunately, victory cannot always be ensured at fixed times and places.

Let me give you one more example; a good example to prove the right of control from the Government's point of view.

There was a serious difference of opinion between Moltke and Bismarck in the days of Versailles. Bismarck demanded the earliest possible opening of the siege of Paris; for the earliest possible reduction of the capital was an object very important from a political point of view. Moltke, on the other hand, during the latter part of September thought the end of the war was near, and expected to be back in Germany in October. He only very gradually changed his opinion. There was difficulty about the supply of enough ammunition to ensure real success, etc., etc. The truth seems to be that von Moltke was not at all sure of the necessity, or the advisability, of pressing the siege. But Bismarck had reason to know of the efforts which were being made by the French to bring about foreign intervention, and therefore he intervened; and as von Caemmerer says "we cannot deny Bismarck the right to intervene in questions where strategy itself becomes policy."

Von Moltke is sometimes quoted as an opponent of Clausewitz in this one respect, *i.e.*, regarding the continuance of the influence of policy on action of war. The above example possibly accounts for this attitude?

The Germans in 1866 and 1870 enjoyed much of the advantages which Napoleon experienced as strategist and statesman combined, in that the King, the head of the Government, and Bismarck accompanied the army throughout the campaign. Moltke's opinion was, therefore, always sure of receiving due weight when contrasted with Government opinion as expressed by Bismarck. It is not quite like the ordinary case when the Government is at home, and the soldier far away in the field. But, if this be the fact, is it not all the more incumbent on statesmen who do not accompany the army in the field, to learn something of war? To learn enough to know when the exercise of control will be harmful?



The Archduke Charles of Austria wrote, "The strategical design depends, as a rule, upon the decision of cabinets, and upon the resources placed at the disposal of the commander. Consequently either the leading statesmen should have correct views of the science of war, or should make up for their ignorance by giving their entire confidence to the man to whom the supreme command of the army is entrusted. Otherwise, the germs of defeat and national ruin may be contained in the first preparations for war."

A Minister of War cannot divest himself of his responsibility for the conduct of military operations, for, firstly, he is responsible to the Government that plans of campaign to meet every contingency are worked out in time of peace, and, secondly, he is responsible for the advice on which he acts being the best procurable.

Now may I ask you to consider 1862 for a moment. It is an illuminating plan of campaign so far as our subject is concerned.

We know quite well that Lincoln did much to ruin McClellan's plan of campaign in the early part of 1862, that his action was ill-advised, and nearly defeated his own ends.

Lincoln, the head of the Government, when reluctantly giving assent to McClellan's plan, insisted that the safety of Washington should be assured. The necessity for the adequate safeguarding of the capital of the Union was real and necessary from the political point of view.

McClellan, the servant of the Government, urged on the Government the acceptance of his plan of campaign against the will of the Government. He knew that when he landed at Fortress Monroe the Confederates would be obliged to concentrate for the defence of their capital Richmond, and could not, therefore, prosecute designs on Washington, but he did not take the trouble to convince the Government of this fact.

Again, McClellan made a serious miscalculation. He was, of course, quite right to assume that once he landed in the Peninsula he tied the Confederates to Richmond. But the voyage, or rather voyages, would last one month (15 trips).

Lincoln realised what might happen if the Confederates became aware of Federal movements. McClellan, with his impatience of control, looked only at the principle, which was a correct one, and neglected the details, in which he was at fault. He neglected Jackson in the Valley, and Kernstown—fought after McClellan had embarked—was the result. And Kernstown realised Lincoln's fears, and ruined McClellan's plan.

Kernstown "realised Lincoln's fears." Lincoln stands for Government, and history teaches us, not only in this instance, but in many, that, once political fears are roused, Governments will exercise their undoubted right of control.

Governments are seldom strong enough to risk everything on one bold throw, and see it through to the end, and if the Government is not strong-minded enough to do this, it is useless to try, as

McClellan did, to commit the Government to a plan of campaign against its will.

Better frame a plan of campaign which, while allaying the political fears of your own Government, will tend to increase the fears of your opponent's Government. In other words, in framing a plan of campaign we must not adopt, or recommend, a plan which does not make allowance for the susceptibilities of the Government we serve; if we do, the Government will probably ruin it, though, no doubt, with the best intentions.

If one had time enough to go into the matter, we should find that the Government control was just as severe on the Confederate side, but that Lee avoided McClellan's mistakes and was loyal to his Government whose right of control he acknowledged.

At the commencement of my lecture I mentioned certain principles of strategy. I want now to take one of these principles, the one which, as a matter of fact, most often causes strategy and policy to come into conflict, *viz.*, the principle of concentration. May I quote it in full? "Concentration of superior force, moral and physical, at the decisive time, at the decisive place" is the chief end of strategy. It is the hardest of all strategical principles to apply. History proves that of all strategical principles it is the one least understood, or at any rate least acted upon, by Governments.

(The lecturer here explained, on the black-board, von Moltke's concentration in 1870.)

That, gentlemen, is true concentration undertaken by a strategist great enough to conceive it, and acquiesced in by a Government educated enough to allow it. Compare this with the dispersion of the Federal forces in 1862, the French in 1870.

So much, at present, for war. Now for peace.

We are warned by a great writer, an experienced traveller, and a soldier of no inconsiderable merit—St. Paul.—that "If the trumpet give an uncertain sound, who shall prepare himself to the battle."

In peace, as in war, the 'trumpet' is the policy of the Government. It sounded clear and clarion-like throughout Japan for ten years before 1904. In Russia its notes were discordant and out of tune; it roused no one to make the adequate preparation "to the battle." Various causes have been assigned as the reason for that state of unpreparedness, of which the most common is that Russia was bluffing, and did not realise that Japan would not be taken in by bluff, as in the past other nations had been deceived. Probably there is much truth in this theory.

But there is another reason and it is, if correct, perhaps one which lies near to the root of the matter. It is this. The commencement of hostilities without previous declaration of war being the rule rather than the exception, it is obvious, in order that a State may guard against being surprised, that, when an international crisis is likely, its naval and military authorities must receive timely warning from the Foreign Office, which alone is in a position to know the degree of tension which really exists.

Up to the time of the outbreak of war with Japan there appears to have been little co-ordination of the various government departments in Russia.

A well-known French writer (M. Leroy-Beaulieu) thus describes Russian administration :—

"The branches of the ministry are totally isolated from one another and form so many independent domains, each with its own army of employés, and these departments are usually greatly disposed to quarrel with one another. In other words Russia has ministerial departments, but she has no ministry, no cabinet in the Western sense of the term; there is neither solidarity nor cohesion in the Government."

If that was the state of Russian departments before 1904, let us see how this affected the question of Russian unpreparedness for the war with Japan.

When the negotiations with Japan, which had been dragging on for six months, assumed an acute stage, this want of co-ordination in the Government departments was even more marked than usual, for it was aggravated by various circumstances :—

- (a) Irresponsible and interested advisers had gained a great influence over the Czar to the exclusion of the responsible ministers; and various unwise administrative measures had been adopted on their advice.
- (b) Admiral Alexieff had been created Viceroy in the Far East and, being vested with diplomatic powers, was the intermediary between the Russian Foreign Office and Japan.
- (c) Towards the end of 1903 a Committee was formed to deal with Far Eastern affairs over the head of the Foreign Minister.

Thus we see that, as the crisis became acute, there were three administrative bodies, each with independent views and ideas, dealing with this Far Eastern question, and none of the three was apparently at all inclined to keep the Minister of War, and, therefore, the responsible military advisers, *au courant* with their policy.

Is it to be wondered at, then, that Russian diplomacy did not work hand in hand with the Russian military and naval authorities, and that the result was that Japan, with her government departments working in harmony, found Russia unready?

Since 1905, a council of imperial defence has been formed in Russia to consider and co-ordinate all measures for defence proposed by the naval and military authorities, and to ensure that the development of the means of defence keeps pace with Russian diplomacy.

If there is anything in the arguments I have put forward up to now and, after all, they are all taken from history, there are certain deductions which history seems to point out as lessons to the soldier, to the statesman, and to the nation. And they seem to be these :—

- (a) To the soldier. To frame plans in harmony with the political object, as Moltke did in 1866, not as McClellan persisted in

doing in 1862; to be prepared to modify those plans, if necessary, as Moltke did; more, indeed, to be always prepared for such changes as may be required to meet the demands of policy. We are, all of us, apt to get impatient of change, unless the necessity for the change is apparent. Sometimes even then!

Governments would, therefore, appear to be well advised to keep the strategist fully informed, and to give such reasons for any change as will enable the commander in the field to appreciate the urgency of the case. Trust must be reciprocal.

The soldier must give his advice on military matters, and, more, he must point out the dangers to the State of the neglect of such advice, and show how the military situation will thereby be affected. And this refers particularly, perhaps, to advice tendered in peace time on questions, not of to-day or to-morrow, but which may affect us 50 years hence. But if that advice be rejected, it is then his duty to frame a new, or a modified, plan suitable to the policy and susceptibilities of the Government he serves. Otherwise his plan will be ruined, as was McClellan's in 1862. The soldier can learn another lesson from the susceptibilities of his own Government: how to work on the susceptibilities of other Governments. We, as soldiers, are always taught that war is more a struggle for mastery between two minds than between two masses; that big brains are of more account than big battalions. And that is so. But it is also a struggle for mastery over other minds than those of the opposing generals.

How did the Confederates in 1862 gain their successes? Their strategy during April, May, and June 1862 did not impose on the Commander-in-Chief of the Federal forces for one minute; but it did impose on the true commander of the Federal forces, *i.e.*, the head of the Government, Lincoln.

All their strategical combinations were designed to shake Lincoln's nerve, and to make Lincoln anxious for the safety of what he deemed to be the weak joint in the Federal armour, *i.e.*, the safety of Washington. Lee recognised that the control rested with Lincoln, and therefore he played on Lincoln's fears; and the result was eminently successful.

Had Lincoln reposed full trust and confidence in McClellan, as he did afterwards in Grant, he would not have been imposed upon any more than was McClellan, and, consequently, the strategical movements of the Confederates would not have met with the success they did.

(b) For the statesman. There is the necessity for the real co-ordination of the different Government departments concerned. There is the clear definition of the policy on which the war is based. And there is the necessity to put the strategist in possession of the trend of that policy and keep him posted in any change, and (if the statesman be wise) to be guided by him as to the strategy of the campaign.

Trust in this instance also must not be one-sided. Any idea of ordering strategical movements must be guarded against. Into the region of tactics, of course, Governments must not stray. Lincoln and Staunton, the head of the Government and the War Minister, in 1862 directed strategical combinations to the great advantage of their enemies. And, before they learned better, the South were so misguided in their policy that they could not understand the advantage, after Bull Run, of making a tactical offensive, while maintaining a state of strategical defensive. In fact, caution got the upper hand of confidence, and when that occurs it is—as a writer in the *Quarterly* lately pointed out—a difficult and dangerous period in national affairs.

I think we also see in this deduction from history that Governments are seldom strong enough to risk everything on one big throw, as France did in 1815. But France then meant Napoleon, and Napoleon, being the head of the State as well as of the Army, had to consult nobody.

It would appear that of all the strategical principles the one most necessary for a Government to grasp is the principle of concentration. History undoubtedly shows us that the majority of Governments wish to be strong at all points. The inevitable result is that they are strong nowhere, which means dispersion instead of concentration, *i.e.*, the danger of being beaten in detail instead of winning the victory.

In 1870 France tried to guard all avenues of approach, though the plan of campaign admittedly was to advance and assume the offensive in the enemy's territory. So set were they on this guarding of every point that, though the road through Thionville was blocked by a fortress, they put an army corps in front of the fortress!

Before the "Hundred Days" Wellington and Blücher were spread over a front of 220 miles, because the policy of the allied Governments so demanded. The result was that Napoleon concentrated his forces in an area of 20 to 30 miles and was enabled thereby, concentrated, to strike a blow and win a victory at Ligny.

There are numberless other examples which could be quoted from history. These will suffice.

But perhaps this very question of concentration is of the more importance to us because we do not possess a national army—that we are dependent on the voluntary system, and therefore have not very many men to support whatever our policy may be. Although I am not in a position to discuss so important a question to the empire as the present Mediterranean question, I may, perhaps, be permitted to remark that we, of all countries, cannot expect to be strong everywhere, and that so long as we depend on voluntary enlistment for the naval and military forces necessary to carry out our national policy, we must concentrate where there is the most

pressing danger. The most pressing danger at the present time seems to be in the North Sea. I do not suppose there is more outcry in regard to the Mediterranean question than there was to the strategy of von Moltke when he left exposed to the attack of France the South German States which, four years before, had been in arms against Germany.

There is one other lesson to cull from the latest war, which may perhaps fitly be brought forward; and I think that, to bring that forward, I need not do any more than just quote a few lines of Kuropatkin's farewell speech to the attachés, and they are as follows:—In summing up the causes of failure, he quoted, as one of those causes, "The insufficiently warlike spirit of our troops, consequent on the obscurity that surrounded the objects and causes of the war." In olden days, perhaps, that could not have been brought forward by a general, for war in the last century was more the war of monarchs, or, if waged by republics, of dictators. But, nowadays, war is becoming more and more an affair of the people themselves; and certainly national armies, when they go to war, will "want to know," to use a colloquialism, the causes and objects for which the war is undertaken.

Another lesson, which history shows very plainly is a lesson for the statesman, is that the policy of a nation is the measure of its strength. It is useless to devise a policy unless you have the means of backing up that policy, if necessary, by the final arbitrament of war. Bluff will deceive nobody unless, behind the bluff, there is the force necessary to translate that bluff into action.

We soldiers know that the principles of strategy are changeless. But we also know that principles, or rather a knowledge of principles, will not win battles or bring campaigns to a successful issue. It is "the application of principles" that, as Henderson says, "needs years of apprenticeship in the military art", and the application should be left to those who spend their lives studying and, on occasion, applying those principles.

In the Committee of Imperial Defence we have, at home, a valuable asset for co-ordinating policy and strategy; for defining the objects in view, and for settling what forces are required for the purpose; and, as both the statesman and the strategist are represented on the Committee, the task of a present-day Government should be an easier one than in the past, that is to say, if due weight is given to both sides.

(c) The world is in rather a tangle just at present, and if history is to be of any use to us, then surely we ought to learn from recent and past history. To my mind the history of all successful wars for the last hundred years is the history of successful preparation for war. Not preparation when the danger is imminent, though that is better than nothing at all, but well regulated preparation on a definite policy directed to a well defined end. And in successful preparation for war there must be harmony between

policy and strategy ; and preparation must be timely and it must be national ; it cannot be confined to the sailor and the soldier.

We are apt to read the lessons of history, and then to consider the defeated side and wonder how the warnings, so clear to us now, can possibly have been lost on the Government concerned. Some of us feel that as regards the latest war. Some of us may wonder how all the preparations for war made by Japan could have been lost by the Czar's advisors. Either Japan was able to conceal successfully her preparations (which argues that her national discipline was well nigh perfect) or Russian secret service was no better before the outbreak of war than it was during the war. Perhaps a little of both.

I sometimes wonder why we do not apply these lessons to ourselves ; because, after all, it is conceivable that our own case may not be very dissimilar to that of Japan. What was vital to her will always be vital to us—command of the sea.

She was threatened by a mighty power whose land forces largely outnumbered her own, and whose navy, could it gain command of the sea, would so cripple the financial and economic resources of the country as to paralyse its industrial life.

Our relations with all other powers are, at present, "friendly." We have the openly expressed statement of the Foreign Secretary to that effect. But a change may come o'er the spirit of our dream ?

Let us not, therefore, be forgetful of what makes for war, and let us always be mindful of the need of preparation for war, for anyone who studies military history knows that one of the causes of war is "deep-rooted national feelings and jealousies." When such feelings are in existence, any pretext, however insignificant, may serve to precipitate nations into war. Without such feelings, or with such feelings not really national or deep-rooted, diplomacy may be able to settle outstanding differences. Otherwise diplomacy can but postpone the outbreak, and only then if neither side is quite satisfied that a favourable opportunity offers at the time.

Let me repeat what we can learn from a study of military history.

Success in war is gained by patient, thorough preparation, a close harmonious working between statesmen and soldiers, and—at the suitable moment—a crushing blow.

And remember that the choice of the suitable moment for the crushing blow does not necessarily imply aggression. It may, it probably will, be the best weapon for the defender.

"Let it suffice that no estate expect to be great that is not awake upon any just occasion or arming."

#### DISCUSSION.

H. E. THE VICEROY honoured the meeting by addressing a few remarks to the audience at the conclusion of the lecture, in

the course of which he emphasised the importance of General Braithwaite's subject.

SIR P. H. LAKE, K.C.M.G., C.B., Chief of the General Staff, said:—Your Excellencies, Your Honour, Ladies and Gentlemen,—I think after the lecture to which we have just listened, and the most illuminating address of His Excellency the Viceroy, no comments are needed from me. I should like as President of the Council of this Institution to express the thanks of the Institution to His Excellency for coming here and for giving us this address, in which his wide experience and ripe knowledge of men and affairs were displayed for our equal pleasure and benefit.

THE CHAIRMAN (FIELD-MARSHAL LORD NICHOLSON, G.C.B.):—Your Excellencies, Your Honour, Ladies and Gentlemen,—As nobody else wishes to discuss this lecture, I will offer a few remarks on the subject. I am sure the lecturer has convinced us, if we needed to be convinced, of the enormous advantage of close and cordial relations between the responsible statesman and the responsible naval or military strategist. Such relations are not always easy to establish, because the opinions of the most prominent soldiers and sailors of the day often vary a good deal, and the responsible statesman has first to determine who for the time being is likely to be his most competent adviser. The statesman having decided upon the policy most advantageous to his country has to consult the strategist and ascertain whether the naval and military resources available are sufficient to support and carry out that policy. If they are inadequate, then it has to be considered whether, to what extent, and within what period, these resources can be amplified. This is largely a matter of national expenditure and national sentiment. If it is found that the existing resources cannot be amplified to the requisite extent and within the requisite time, then the statesman has to modify his policy, and the strategist has to revise his plans to accord with the modified policy. In fact, the statesman and the strategist have to cut the national coat according to the cloth which the nation is able and willing to provide.

General Braithwaite has referred to former campaigns as exemplifying the necessity of strategy in war conforming to the political exigencies of the situation, and has illustrated this by a reference to Lincoln and McClellan. There is no mystery about strategical principles. They are essentially based on common sense and experience; and as the statesman is, as a rule, likely to be possessed of more common sense and to have a wider outlook than the strategist, it may reasonably be assumed that, unless the strategist is able to convince the statesman that his proposed plan of action is sound, there is a strong probability of its proving to be unsound. For my own part I do not attach so much importance to abstract strategical principles as to their practical and appropriate application.



The lecturer has very justly laid stress on the strategical principle of being able to concentrate for war in superior force at the decisive point and at the decisive moment. That principle no one is likely to dispute; but its application must vary according to the national and international conditions affecting the Powers concerned. It is a comparatively easy task to observe this principle in the case of a self-contained continental Power with few and insignificant outlying possessions; but it is a different matter in the case of an empire which comprises outlying possessions of large extent and great importance, scattered throughout the globe and demanding peace and war garrisons. In the latter case the considerations of time and space, and the maintenance of obligatory garrisons, render the problem of concentration an extremely difficult and complicated one. As our lines of Imperial communication are by sea, it follows that for this and other reasons sea power is of vital moment to the British Empire.

General Braithwaite has spoken of the interdependence of policy and strategy. I would go further and add military administration. Strategists may make the best plans in the world, but if these plans have to be carried out by an army which is defective in organization, training, equipment, transport, and the like, and if that army is not well commanded, then it may be defeated by another army better equipped, better trained, and better commanded, though acting on an inferior plan of operations. The main functions of the military administrator in peace time are to see that the funds allotted to the army are expended to the best advantage, and to fit the army in personnel, *materiel*, organization, and equipment for its duties in peace and war. In war, the functions of the military administrator are to see that the army takes the field fully mobilized, and with adequate arrangements for supply and transport, to provide if necessary for its reinforcement, and to make good the wastage of war. We are apt to ignore the functions of the military administrator, and to give the whole credit to the commander in the field or the strategist. Thus, for example, in the conflicts between Prussia and Austria and between Prussia and France the successes of Prussia were no doubt due to Bismarck and Moltke, but no less was the credit due to Roon, the War Minister. Similarly, in the Manchurian war the successes of Japan were due not only to the responsible statesmen and strategists, but to the capable and experienced War Minister, Terauchi. In Germany and in Japan the functions of command and the duties of the General Staff, which include the preparation of war plans, and the control of training and war organization, are separated from the functions of military administration, the last being assigned to the War Minister. At the War Office a similar distinction is drawn, though not on identical lines owing to constitutional differences. It would be out of place to refer to the Indian system which has been so recently modified. Under whatever system, however, the functions of command, the duties of the General Staff, and military administration are carried

out at the headquarters of an army, whether they be united in one individual or separated among several individuals, one thing is certain, that to make an army efficient the staff which is charged with the preparation of war plans, war training, and war organization should work hand in hand with the staff and departments which deal with administrative duties. If they fail to work hand in hand both at headquarters, in divisions, and in smaller formations, dislocation immediately ensues. For that reason I think that the Staff College ought to aim at turning out officers who have not only studied the higher principles of the art of war, but who have been imbued with the necessity for working in complete harmony with their comrades in staff, departmental, and regimental employ, and who also have been instructed in the practical duties which will devolve upon them when they join the staff as junior general staff officers, or brigade majors, or deputy assistant adjutant-generals, or deputy assistant quartermaster-generals. General Braithwaite has rather trespassed into my domain by quoting from the Bible. The remarks of St. Paul regarding trumpet calls are apposite, though I did not know that he had ever distinguished himself as a soldier. Basing himself on this quotation, the lecturer has referred to the clarion notes with which the Government of a united nation should enunciate the national policy. I am a little doubtful about these notes, because it is not always desirable to disclose the policy beforehand and because from time to time international relations are subject to revision and modification. Besides, I think that it is opposed to the character of the British race to sound such clarion notes. It is, or used to be, our custom to make up our minds and hold our tongues. I may remind you that bull-dogs do not bark.

If I had occasion to consult the Bible on military subjects, I should be inclined to turn to the Old Testament. I should quote to you the injunction given to Joshua, the son of Nun, when he was called upon to undertake a hazardous enterprise of vital importance to his nation. The injunction is a short one—"only be strong and very courageous." This I take to mean strong enough to comply with the strategical principle of being capable of meeting the enemy in superior force at the decisive time and place, and courageous enough to defeat the enemy when encountered. There is a great deal in moral as well as physical courage. First count the cost as carefully as you like, and then, having made up your mind, stick to it. Hardly anything is more detrimental in war than vacillation, and I venture to think that His Excellency the Viceroy will agree that the same is the case in regard to policy.

I have inflicted on you a longer speech than I intended, and I now beg to propose for your unanimous concurrence a vote of thanks to General Braithwaite for his most interesting and instructive lecture. (Cheers.)

The lecturer has very justly laid stress on the principle of being able to concentrate for the decisive point and at the decisive moment. One is likely to dispute; but its application to the national and international conditions is concerned. It is a comparatively easy matter in the case of a self-contained country, or an insignificant outlying possession, but in the case of an empire which has a wide extent and great importance, and which is demanding peace and war, the considerations of time and space, and the garrisons, render the problem a very complicated one. In the case of a country by sea, it follows that the decisive moment is to be found in the

General Policy and Strategy. Should these principles be applied in organization that is another thing.

## AUTOMATIC RIFLES

BY CAPTAIN C. J. D. FREETH, R. A.

The automatic rifle is now engaging the attention of every civilised nation in the world, and the value of such an arm in war is a subject of frequent discussion in all military periodicals. Those averse to its adoption assert that the difficulties connected with the supply of ammunition render the introduction of an automatic rifle undesirable, and they affirm that no perfectly satisfactory and reliable weapon of this nature will ever be produced. It has also been urged as an argument against automatic rifles that "targets which would justify expenditure of ammunition at a rate of 20 or more rounds per minute, must be exceedingly rare in a modern battle"\* It is said that any rate of fire greater than that of the service rifle is impossible, as the heating of the barrel makes the rifle too hot to handle, besides rendering aiming practically impossible and extraction very difficult.

The advocates of an automatic rifle point out that the rapidity of fire possible with such a rifle places a valuable reserve of power in the hands of a commander, that the ability to shoot quickly does not by any means imply that rapid fire should be resorted to on all occasions, and that the efficient control of the expenditure of ammunition is entirely a matter of training. It must not be forgotten that the same difficulties in ammunition supply presented themselves on the introduction of the magazine rifle and on the adoption of a quick-firing field gun. And since in both those cases a solution of the difficulties has been found in efficient training, it would seem reasonable to suppose that the problem in the case of the automatic rifle is not altogether insoluble.

Be this as it may, it is universally admitted that, if any of the leading powers were to adopt an automatic rifle, all other nations would be compelled to follow their example. History has demonstrated that the moral influence bestowed upon an army by its possession of a superior weapon, is an asset which no country can afford to neglect.

Undoubtedly the advantages of a reliable automatic rifle are great. In the first place, the firer is relieved of all the fatigue caused by opening and closing the breech. Again, the absence of movement, except when charging the magazine, is a distinct aid to invisibility, and the power to shoot rapidly, when the necessity arises, is a valuable and indisputable advantage. "There is no need to loosen the grip of the right hand on the small of the butt in order to work the bolt. The rifle need not be taken down from the shoulder between the shots; therefore the firer's attention is not distracted from the object."†

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\* "Automatic Rifles," *Army Review*, January 1912.

† Text-book of Small Arms, 1909, p. 31.

These are a few of the arguments for and against the introduction of an automatic weapon from a tactical point of view. It is not, however, proposed to pursue this aspect of the case further, as the object of the article is to investigate the subject on its mechanical side, to study the attributes of a good automatic weapon, and to grasp the general principles on which such a weapon is constructed.

The first thing necessary is to have a perfectly clear conception of what an ideal automatic rifle for military purposes should be capable of. Perhaps the simplest way of acquiring this knowledge is by a perusal of one of the specifications for a military automatic rifle which have been drawn up by many of the European powers.

The following is the specification for the French automatic rifle. The specification may be taken as embodying the principal features demanded by the military authorities of all countries. It runs as follows :—

"1. *Loading*.—The weapon must be loaded from a magazine, or other analogous arrangement, holding 5 rounds at most.

"The system of automatic loading must admit of the contents of the magazine being fired by means of repeated pressure on the trigger, without taking the rifle from the shoulders.

"The weapon must (in addition to any automatic action) be capable of being used as a single loader, and of firing single shots.

"2. *General handiness*.—The weapon must be simple, strong, and easily kept in order. It should be capable of being stripped and reassembled, as far as possible, by hand.

"The breech mechanism must be protected against rain, dust, dirt, etc. Fouling due to prolonged firing, under normal service conditions, must not cause inconvenience either to the firer or his neighbours.

"Some form of hand-guard must be provided.

"The weapon must have a simple, strong, and reliable safety apparatus, easy to handle. It must be possible to unload the weapon quickly, at any moment.

"The rifle must be capable of firing blank for the purposes of drill and manœuvres.

"3. *Weight*.—The weight of the weapon, without bayonet and with the magazine empty, must not exceed 9·26 lbs. Whatever the weight, the recoil must not be excessive.

"4. *Weight of ammunition*.—The calibre must not be less than ·2569 inches. Subject to this reservation, the ammunition should be as light as possible.

"5. *Length of weapon*.—The rifle must be of such length as to admit of its being fired in two ranks with the bayonet fixed. The total length must not be appreciably shorter than that of the weapons now in use.

"6. *Sighting*.—The rifle must be provided with fixed sights capable of being used at once (without preliminary handling) and such as to make the operation of taking aim, with regard to elevation

(which is more important than direction), as simple and easy as possible.

"There should also be some form of auxiliary sights, admitting of accurate fire at all ranges.

"7. *Rapidity of fire*.—This must be at least 20 rounds a minute in the lying down position.

"8. *Accuracy*.—The accuracy of any new weapon must be at least equal to that of the rifle at present in use.

"9. *Flatness of trajectory*.—The culminating point of the trajectory, for a range of 880 yards, shall not exceed a height of 5.25 feet. At medium and long ranges (up to 1,600 yards at least) the behaviour of the bullet must be at least as regular as that of the present rifle.

"10. *Penetration*.—This must be as great as possible, and at least equal to that of existing weapons."\*

It should be noted that there is no demand for a weapon which will fire the entire contents of the magazine by means of a single pressure of the trigger, but that one round should be discharged by each pressure of the trigger, the operations of extracting the empty cartridge case, reloading, closing the breech, and recocking being performed automatically. A hand weapon which continues firing like a machine gun as long as the trigger is pressed is unsuitable for military purposes owing to the impossibility of keeping the aim steady.

Although it cannot claim any great antiquity, the automatic rifle has nevertheless a longer and more interesting history than it is generally credited with. As long ago as 1854 the possibilities of automatic action were foreseen by the great steel inventor, Sir Henry Bessemer. In this year he took out a patent for what he described as an improvement "in constructing guns so that the reactive force of explosive gunpowder is made the agency of mechanism to reload and to discharge the gun."† The principle is shown applied to heavy guns, and it is believed that the inventor had not sufficient confidence in his crude ideas to embolden him to put them to a practical test.

From 1854 to 1883 little or no progress can be traced from the Patent Journals. But in 1883, the name of another great inventor Sir Hiram Maxim, looms out of the mist. He claimed to have invented a means of adopting ordinary single-loading rifles to fire as machine guns, and applies his patent‡ to the Winchester rifle, a bolt gun, and the Peabody Martini rifle. In the bolt gun, the whole contents of the magazine were intended to be fired by a single pressure of the trigger; but for the Winchester and Peabody Martini rifles, he only seems to have provided automatic extraction and ejection, the reloading having to be accomplished by hand.

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\* La Revue d'Infanterie. February 15th, 1910.

† Patent 1868/1354.

‡ Patent 3178/1883.

In these designs the safety arrangements are extremely crude and there would seem to be great danger of the weapon being accidentally fired. Nevertheless, this patent contains a clear conception of an automatic action, the recoil force being utilised for extracting the empty cartridge, "for bringing a fresh cartridge from the magazine into position, and for preparing the gun for the next discharge."\*

Another notable automatic rifle appears in the Patent Journal in 1891.† This rifle, which is also the product of Sir Hiram Maxim's brain, was designed on an entirely different principle to that on which his previous patent was based.

The motive power for this weapon was obtained by venting the barrel and utilising the force of the gas which passed through the vent to work a piston which operated the breech mechanism. Although this design is of a very elementary type and possesses many defects, among which the venting of the barrel too near the chamber was, perhaps, the worst, nevertheless it is by no means a bad example of the gas actuated system—a system which is not only considered promising but which has actually been adopted by the Mexican Government.

From this period right down to the present day a constantly increasing number of designs of automatic rifles have been patented yearly. From these it is proposed to select the systems which have proved themselves worthy of consideration, and to describe the general principles on which they are designed, omitting all reference to those details which do not belong exclusively to automatic rifles.

An automatic rifle has many parts which would be equally suitable for a magazine rifle, *e.g.*, the sights, safety catch, and possibly the butt; but there are other parts which have to be specially designed in order to obtain automatic action, namely, the breech action, the trigger mechanism, and the means by which the force of the explosion is applied to operate the breech.

It will be found most convenient to classify automatic rifles according to the means by which automatic action is obtained. There are in all five distinct classes, *viz* :—

- (1) The gas-operated rifle.
- (2) The rifle operated by an inertia block.
- (3) The rifle operated by a moving cap.
- (4) The toggle-jointed rifle.
- (5) The recoiling barrel rifle, (short recoil).
- (6) The recoiling-barrel rifle (long recoil).

It is now proposed to make the reader generally acquainted with the distinguishing features of automatic rifles, by describing briefly the operating mechanism, the action, and the trigger mechanism of a good typical example of each of the above classes.

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\*Patent 3178/1883.

†Patent 22895/1891.

## THE GAS-OPERATED RIFLE.

The first type which will be dealt with is that known as the gas-operated rifle. The Mondragon rifle is the rifle selected to illustrate this type. This weapon has been recently approved for issue to the Mexican Army, and it may therefore be assumed that its preliminary trials were not altogether without promise.

The automatic portions of the rifle are illustrated in figures 1, 2 and 3 (*vide* diagrams at end of this article).

Fig. 1 gives a sectional elevation of the muzzle end of the stock.

Fig. 2 is a plan of the connecting rod and side lever.

Fig. 3 shows the elevation and end view of the breech bolt.

The rifle is operated in the following manner:-- When the bullet has travelled to within about six inches of the muzzle, the gas passes through a small vent (1) in the under side of the barrel into a cylinder or tube driving back a piston (2) and compressing a spiral spring (3) between the piston head and the end of the tube. The rear end of the piston rod is yoked to a connecting rod (4) and thus communicates its movement to a lever (5) which slides along a smooth surface on the right side of the body. There are two projections (6) and (7), on this sliding lever which engage helical slots (8) and (9) in the bolt (10). When the lever commences to move backwards, the projections (6) and (7), sliding in the slots (8) and (9), cause the bolt to revolve sufficiently to disengage the locking lugs (10') from the body, a spring pin (11) on the lever engages a hole (12) in the breech bolt, and the lever and bolt, thus connected, travel together until the magazine is completely disclosed. During this operation, the empty cartridge is extracted and the hammer\* is cocked. The spiral spring in the gas tube then drives forward the piston, which in turn closes and locks the bolt, at the same time feeding a fresh cartridge into the chamber.

In order to operate the rifle by hand, it is necessary to shut off the passage for the gas by turning the nut (15) through half a circle. This revolves the plug (14) so as to bring the channel (16) opposite the vent (1) and allows the gas to escape to the outer air. When the lever is gripped by the hand, a spring-operated catch (13) automatically disconnects the piston rod from the lever.

Figure 4 shows a sectional elevation of the trigger mechanism of the rifle. This is a very important part of any automatic rifle; for, in order to obtain single shots, it is necessary to arrange that the sear should be automatically released from the trigger immediately after the rifle has been fired. If this release of the sear were not arranged for, the action would not be recocked, and the striker would travel forward with the bolt. The result would be either continuous firing or missfires according to whether the force, with which the striker was pushed against the cap, was sufficient to fire it or not.

In this design the striker, which passes down the centre of the breech bolt, is operated by a hammer (1). When the bolt is driven

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\* See page (353).



to the rear, the hammer (1) is forced back by the striker (3). The hammer, in its turn, drives back the rod (5) until the bent (4) engages the nose of the sear (6), and, at the same time, compresses the main spring (2).

When the trigger (7) is pulled, the rear end of the supporting pawl (8) is raised, thus forcing the nose of the sear out of the bent and allowing the hammer to be driven forward by the main spring. Almost simultaneously with the release of the hammer, a further slight movement of the trigger causes the pawl (8) to slip off the rear of the projecting end of the trigger, so that the sear is at once brought back to its original position by the sear spring (10), and is ready to retain the rod (5) on its being forced back. The sear spring (10) bears against the bar (11) of the trigger-guard bracket, which is stationary. When the trigger is released, the light coil spring (9) forces the pawl (8) back into its position on the top of the projecting end of the trigger.

This brief description of the Mondragon rifle should be sufficient to illustrate the general principles on which gas-actuated rifles are designed. The distinctive feature of this class is the vent near the muzzle of the barrel through which the gas passes in order to operate the action. The advantages commonly claimed for this class of weapon are simplicity and lightness. The chief disadvantage is the liability of the vent and piston cylinder becoming fouled and a consequent reduction in power, with the possible result that the breech bolt may not be withdrawn sufficiently far to pick up a fresh cartridge from the magazine.

#### THE RIFLE OPERATED BY AN INERTIA BLOCK.

The next type to be described is that which is operated by means of an inertia block.

Although this method has met with some success in pistols and sporting rifles, it is generally considered unsuitable for military rifles on account of the extra weight which it entails, and also because in rifles designed on this principle it is difficult to comply with service safety conditions.

The Sjögun automatic rifle, which will now be described, is a good example of this class.

Figure 5 shows a sectional elevation of the inertia block and the breech block of this rifle; and figure (6) shows the corresponding plan.

The breech is here shown closed, as in the firing position. The breech block (3) is locked to the breech piece (4) by means of two locking levers (5). On the cartridge being fired by the striker (1), the recoil of the rifle causes the inertia block (2), which carries the firing and locking mechanism, to move forward a short distance with relation to the rifle itself. During this movement the sear (6) which is pivoted to the inertia block re-engages with the bent on the striker, both the striker spring (7) and the recoil spring (8) being compressed. At the end of this forward movement, the recoil spring (8), reasserting itself, forces the inertia block to the

rear. This brings the pin (9), which is a part of the inertia block, into contact with the overhanging ends (5') of the locking levers (5), thus disengaging the locking levers from the breech piece. The inertia block continues to travel to the rear by virtue of the momentum which it possesses, carrying with it the breech block and drawing back the connecting rod (10). To the front end of this connecting rod a spiral spring is attached. This spring, which is not shown on the drawings, lies under the barrel in a groove in the fore-end, its forward end being pinned to the fore-end.

When the inertia block has travelled sufficiently far to the rear, the empty cartridge case is extracted and the fresh one is picked up. The spiral spring, which has been extended during this backward movement, then reasserts itself, and the inertia block is returned to the firing position, the new cartridge being fed into the chamber and the breech closed.

Figure 7 shows the sectional elevation of the trigger mechanism of this rifle. It functions in the following manner:—A hooked pawl (2) controlled by a flat spring (3) is pivoted to the front end of the trigger (1). When the trigger is pulled, the hooked pawl draws the sear (4) out of engagement with the striker (5) leaving it free to be carried forward by the striker spring (6). While the sear (4) is being drawn down by the pawl (2), its nose (4) passes into the wedge-shaped opening (7) and causes the pawl to turn on its axis, thus disengaging it from the sear. This disengagement is so arranged as to take place immediately after the release of the striker, thus allowing the sear, aided by the spiral spring (8), to re-engage with the bent on the striker as soon as it is in the correct position to do so.

#### THE RIFLE OPERATED BY A MOVING CAP.

Although this system has been little exploited, it is held by some to be particularly hopeful on account of its simplicity and lightness. There is, however, an inherent objection to this class of rifle in that it necessitates a complicated and undesirable design of ammunition.

In order to illustrate this system the Roth automatic rifle will now be described.

Figure 8 is a longitudinal section of this rifle showing the breech action. The cartridge (1), which is of a special design, has a thick base with a deep cylindrical recess in it, at the bottom of which are the cap and anvil.

The breech bolt (2) is shown with its locking lugs (2') in the locked position, and the firing pin in the cocked position. This firing pin is in two parts (3) and (4). The front portion (4) is contained in the bolt head (5). It has a spiral spring (6) wound round it, which rests between a collar on the pin and a recess in the bolt head. The rear portion (3) of this firing pin is bored out to take the main spring (7) and is prevented from turning by guide ribs formed at its rear end, which move in longitudinal grooves in



## AUTOMATIC RIFLES

BY CAPTAIN C. J. D. FREETH, R. A.

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The advocates of an automatic rifle point out that the rapidity of fire possible with such a rifle places a valuable reserve of power in the hands of a commander, that the ability to shoot quickly does not by any means imply that rapid fire should be resorted to on all occasions, and that the efficient control of the expenditure of ammunition is entirely a matter of training. It must not be forgotten that the same difficulties in ammunition supply presented themselves on the introduction of the magazine rifle and on the adoption of a quick-firing field gun. And since in both those cases a solution of the difficulties has been found in efficient training, it would seem reasonable to suppose that the problem in the case of the automatic rifle is not altogether insoluble.

Be this as it may, it is universally admitted that, if any of the leading powers were to adopt an automatic rifle, all other nations would be compelled to follow their example. History has demonstrated that the moral influence bestowed upon an army by its possession of a superior weapon, is an asset which no country can afford to neglect.

Undoubtedly the advantages of a reliable automatic rifle are great. In the first place, the firer is relieved of all the fatigue caused by opening and closing the breech. Again, the absence of movement, except when charging the magazine, is a distinct aid to invisibility, and the power to shoot rapidly, when the necessity arises, is a valuable and indisputable advantage. "There is no need to loosen the grip of the right hand on the small of the butt in order to work the bolt. The rifle need not be taken down from the shoulder between the shots; therefore the firer's attention is not distracted from the object."†

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\* "Automatic Rifles," *Army Review*, January 1912.

† Text-book of Small Arms, 1909, p. 31.

Up to the time of the outbreak of war with Japan there appears to have been little co-ordination of the various government departments in Russia.

A well-known French writer (M. Leroy-Beaulieu) thus describes Russian administration:—

"The branches of the ministry are totally isolated from one another and form so many independent domains, each with its own army of employés, and these departments are usually greatly disposed to quarrel with one another. In other words, Russia has ministerial departments, but she has no ministry, no cabinet in the Western sense of the term; there is neither solidarity nor cohesion in the Government."

If that was the state of Russian departments before 1904, let us see how this affected the question of Russian unpreparedness for the war with Japan.

When the negotiations with Japan, which had been dragging on for six months, assumed an acute stage, this want of co-ordination in the Government departments was even more marked than usual for it was aggravated by various circumstances:—

- (a) Irresponsible and interested advisers had gained a great influence over the Czar to the exclusion of the respectable ministers; and various unwise administrative measures had been adopted on their advice.
- (b) Admiral Alexieff had been created Viceroy in the Far East and, being vested with diplomatic powers, was the intermediary between the Russian Foreign Office and Japan.
- (c) Towards the end of 1903 a Committee was formed to deal with Far Eastern affairs over the head of the Foreign Minister.

Thus we see that, as the crisis became acute, there were three administrative bodies, each with independent views and ideas, dealing with this Far Eastern question, and none of the three was apparently at all inclined to keep the Minister of War, and, therefore, the responsible military advisers, *en concert* with their policy.

Is it to be wondered at, then, that Russian diplomacy did not work hand in hand with the Russian military and naval authorities, and that the result was that Japan, with her government departments working in harmony, found less a treaty?

Since 1905, a council of imperial defence has been formed.

Russia to consider and co-ordinate all measures for defence proposed by the naval and military authorities, and to ensure that the development of the means of defence keeps pace with Russian diplomacy.

If there is anything in the arguments I have put forward to now and after all they are all taken from history, there are certain deductions which history seems to point out as lessons to be learned by the statesman, and to the nation. And they seem to be these:—

(a) To the soldier. To frame plans in harmony with the political object, as Moltke did in 1866, not as M. Schan persisted in

doing in 1862; to be prepared to modify those plans, if necessary, as Moltke did; more, indeed, to be always prepared for such changes as may be required to meet the demands of policy. We are, all of us, apt to get impatient of change, unless the necessity for the change is apparent. Sometimes even then!

Governments would, therefore, appear to be well advised to keep the strategist fully informed, and to give such reasons for any change as will enable the commander in the field to appreciate the urgency of the case. Trust must be reciprocal.

The soldier must give his advice on military matters, and, more, he must point out the dangers to the State of the neglect of such advice, and show how the military situation will thereby be affected. And this refers particularly, perhaps, to advice tendered in peace time on questions, not of to-day or to-morrow, but which may affect us 50 years hence. But if that advice be rejected, it is then his duty to frame a new, or a modified, plan suitable to the policy and susceptibilities of the Government he serves. Otherwise his plan will be ruined, as was McClellan's in 1862. The soldier can learn another lesson from the susceptibilities of his own Government: how to work on the susceptibilities of other Governments. We, as soldiers, are always taught that war is more a struggle for mastery between two minds than between two masses; that big brains are of more account than big battalions. And that is so. But it is also a struggle for mastery over other minds than those of the opposing generals.

How did the Confederates in 1862 gain their successes? Their strategy during April, May, and June 1862 did not impose on the Commander-in-Chief of the Federal forces for one minute; but it did impose on the true commander of the Federal forces, *i.e.*, the head of the Government, Lincoln.

All their strategical combinations were designed to shake Lincoln's nerve, and to make Lincoln anxious for the safety of what he deemed to be the weak joint in the Federal armour, *i.e.*, the safety of Washington. Lee recognised that the control rested with Lincoln, and therefore he played on Lincoln's fears; and the result was eminently successful.

Had Lincoln reposed full trust and confidence in McClellan, as he did afterwards in Grant, he would not have been imposed upon any more than was McClellan, and, consequently, the strategical movements of the Confederates would not have met with the success they did.

(b) For the statesman. There is the necessity for the real co-ordination of the different Government departments concerned. There is the clear definition of the policy on which the war is based. And there is the necessity to put the strategist in possession of the trend of that policy and keep him posted in any change, and (if the statesman be wise) to be guided by him as to the strategy of the campaign.

Trust in this instance also must not be one-sided. Any idea of ordering strategical movements must be guarded against. Into the region of tactics, of course, Governments must not stray. Lincoln and Staunton, the head of the Government and the War Minister, in 1862 directed strategical combinations to the great advantage of their enemies. And, before they learned better, the South were so mis-guided in their policy that they could not understand the advantage, after Bull Run, of making a tactical offensive, while maintaining a state of strategical defensive. In fact, caution got the upper hand of confidence, and when that occurs it is as a writer in the *Quarterly* lately pointed out—a difficult and dangerous period in national affairs.

I think we also see in this deduction from history that Governments are seldom strong enough to risk everything on one big throw as France did in 1815. But France then meant Napoleon, and Napoleon, being the head of the State as well as of the Army, had to consult nobody.

It would appear that of all the strategical principles the one most necessary for a Government to grasp is the principle of concentration. History undoubtedly shows us that the majority of Governments wish to be strong at all points. The inevitable result is that they are strong nowhere, which means dispersion instead of concentration, i.e., the danger of being beaten in detail instead of winning the victory.

In 1870 France tried to guard all avenues of approach, though the plan of campaign admittedly was to advance and assume the offensive in the enemy's territory. So set were they on the guarding of every point that, though the road through Tannenberg was blocked by a fortress, they put an army corps in front of the fortress!

Before the "Hundred Days" Wellington and Blücher were spread over a front of 220 miles, because the policy of the allied Governments so demanded. The result was that Napoleon concentrated his forces in an area of 20 to 30 miles and was enabled thereby, concentrated, to strike a blow and win a victory at Ligny.

There are numberless other examples which could be quoted from history. These will suffice.

But perhaps this very question of concentration is of the more importance to us because we do not possess a national army—that we are dependent on the voluntary system, and therefore have not very many men to support whatever our policy may be. Although I am not in a position to discuss so important a question to the empire as the present Mediterranean question, I may, perhaps, be permitted to remark that we, of all countries, cannot expect to be strong everywhere, and that so long as we depend on voluntary enlistment for the naval and military forces necessary to carry out our national policy, we must concentrate where there is the most

pressing danger. The most pressing danger at the present time seems to be in the North Sea. I do not suppose there is more outcry in regard to the Mediterranean question than there was to the strategy of von Moltke when he left exposed to the attack of France the South German States which, four years before, had been in arms against Germany.

There is one other lesson to cull from the latest war, which may perhaps fitly be brought forward; and I think that, to bring that forward, I need not do any more than just quote a few lines of Kuropatkin's farewell speech to the attachés, and they are as follows:—In summing up the causes of failure, he quoted, as one of those causes, "The insufficiently warlike spirit of our troops, consequent on the obscurity that surrounded the objects and causes of the war." In olden days, perhaps, that could not have been brought forward by a general, for war in the last century was more the war of monarchs, or, if waged by republics, of dictators. But, nowadays, war is becoming more and more an affair of the people themselves; and certainly national armies, when they go to war, will "want to know," to use a colloquialism, the causes and objects for which the war is undertaken.

Another lesson, which history shows very plainly is a lesson for the statesman, is that the policy of a nation is the measure of its strength. It is useless to devise a policy unless you have the means of backing up that policy, if necessary, by the final arbitrament of war. Bluff will deceive nobody unless, behind the bluff, there is the force necessary to translate that bluff into action.

We soldiers know that the principles of strategy are changeless. But we also know that principles, or rather a knowledge of principles, will not win battles or bring campaigns to a successful issue. It is "the application of principles" that, as Henderson says, "needs years of apprenticeship in the military art", and the application should be left to those who spend their lives studying and, on occasion, applying those principles.

In the Committee of Imperial Defence we have, at home, a valuable asset for co-ordinating policy and strategy; for defining the objects in view, and for settling what forces are required for the purpose; and, as both the statesman and the strategist are represented on the Committee, the task of a present-day Government should be an easier one than in the past, that is to say, if due weight is given to both sides.

(c) The world is in rather a tangle just at present, and if history is to be of any use to us, then surely we ought to learn from recent and past history. To my mind the history of all successful wars for the last hundred years is the history of successful preparation for war. Not preparation when the danger is imminent, though that is better than nothing at all, but well regulated preparation on a definite policy directed to a well defined end. And in successful preparation for war there must be harmony between



policy and strategy; and preparation must be timely and it must be national; it cannot be confined to the sailor and the soldier.

We are apt to read the lessons of history, and then to consider the defeated side and wonder how the warnings, so clear to us now, can possibly have been lost on the Government concerned. Some of us feel that as regards the latest war. Some of us may wonder how all the preparations for war made by Japan could have been lost by the Czar's advisors. Either Japan was able to conceal successfully her preparations (which argues that her national discipline was well nigh perfect) or Russian secret service was no better before the outbreak of war than it was during the war. Perhaps a little of both.

I sometimes wonder why we do not apply these lessons to ourselves; because, after all, it is conceivable that our own case may not be very dissimilar to that of Japan. What was vital to her will always be vital to us — command of the sea.

She was threatened by a mighty power whose land forces largely outnumbered her own, and whose navy, could it gain command of the sea, would so cripple the financial and economic resources of the country as to paralyse its industrial life.

Our relations with all other powers are at present "friendly." We have the openly expressed statement of the Foreign Secretary to that effect. But a change may come over the spirit of our dream?

Let us not, therefore, be forgetful of what makes for war, and let us always be mindful of the need of preparation for war, for anyone who studies military history knows that one of the causes of war is "deep-rooted national feelings and jealousies." When such feelings are in existence, any pretext, however insignificant, may serve to precipitate nations into war. Without such feelings, even with such feelings, not really national or deep-rooted, diplomacy may be able to settle outstanding differences. Otherwise diplomacy can but postpone the outbreak, and only when it next or else is quite satisfied that a favourable opportunity offers at the time.

Let me repeat what we can learn from a study of military history.

Success in war is gained by patient, thorough preparation, a close harmonious working between statesmen and soldiers, and at the suitable moment — a crushing blow.

And remember that the close of the suitable moment for the crushing blow does not necessarily imply aggression. It may, it probably will, be the best weapon for the defender.

"Let it suffice that none can expect to be great that is not awake upon any just occasion or warning."

DISCUSSION.

H. E. THE VICE-CHANCELLOR closed the meeting by addressing a few remarks to the audience at the conclusion of the lecture, in

the course of which he emphasised the importance of General Braithwaite's subject.

SIR P. H. LAKE, K.C.M.G., C.B., Chief of the General Staff, said:—Your Excellencies, Your Honour, Ladies and Gentlemen,—I think after the lecture to which we have just listened, and the most illuminating address of His Excellency the Viceroy, no comments are needed from me. I should like as President of the Council of this Institution to express the thanks of the Institution to His Excellency for coming here and for giving us this address, in which his wide experience and ripe knowledge of men and affairs were displayed for our equal pleasure and benefit.

THE CHAIRMAN (FIELD-MARSHAL LORD NICHOLSON, G.C.B.):—Your Excellencies, Your Honour, Ladies and Gentlemen,—As nobody else wishes to discuss this lecture, I will offer a few remarks on the subject. I am sure the lecturer has convinced us, if we needed to be convinced, of the enormous advantage of close and cordial relations between the responsible statesman and the responsible naval or military strategist. Such relations are not always easy to establish, because the opinions of the most prominent soldiers and sailors of the day often vary a good deal, and the responsible statesman has first to determine who for the time being is likely to be his most competent adviser. The statesman having decided upon the policy most advantageous to his country has to consult the strategist and ascertain whether the naval and military resources available are sufficient to support and carry out that policy. If they are inadequate, then it has to be considered whether, to what extent, and within what period, these resources can be amplified. This is largely a matter of national expenditure and national sentiment. If it is found that the existing resources cannot be amplified to the requisite extent and within the requisite time, then the statesman has to modify his policy, and the strategist has to revise his plans to accord with the modified policy. In fact, the statesman and the strategist have to cut the national coat according to the cloth which the nation is able and willing to provide.

General Braithwaite has referred to former campaigns as exemplifying the necessity of strategy in war conforming to the political exigencies of the situation, and has illustrated this by a reference to Lincoln and McClellan. There is no mystery about strategical principles. They are essentially based on common sense and experience; and as the statesman is, as a rule, likely to be possessed of more common sense and to have a wider outlook than the strategist, it may reasonably be assumed that, unless the strategist is able to convince the statesman that his proposed plan of action is sound, there is a strong probability of its proving to be unsound. For my own part I do not attach so much importance to abstract strategical principles as to their practical and appropriate application.

The lecturer has very justly laid stress on the strategical principle of being able to concentrate for war in superior force at the decisive point and at the decisive moment. That principle no one is likely to dispute; but its application must vary according to the national and international conditions affecting the Powers concerned. It is a comparatively easy task to observe this principle in the case of a self-contained continental Power with few and insignificant outlying possessions; but it is a different matter in the case of an empire which comprises outlying possessions of large extent and great importance, scattered throughout the globe and demanding peace and war garrisons. In the latter case the considerations of time and space, and the maintenance of obligatory garrisons, render the problem of concentration an extremely difficult and complicated one. As our lines of Imperial communication are by sea, it follows that for this and other reasons sea power is of vital moment to the British Empire.

General Branthwaite has spoken of the interdependence of policy and strategy. I would go further and add military administration. Strategists may make the best plans in the world, but if these plans have to be carried out by an army which is defective in organization, training, equipment, transport, and the like, and if that army is not well commanded, then it may be defeated by another army better equipped, better trained, and better commanded though acting on an inferior plan of operations. The main functions of the military administrator in peace time are to see that the funds allotted to the army are expended to the best advantage, and to fit the army in personnel, *material*, organization, and equipment for its duties in peace and war. In war, the functions of the military administrator are to see that the army takes the field fully mobilized, and with adequate arrangements for supply and transport, to provide if necessary for its reinforcement, and to make good the wastage of war. We are apt to ignore the functions of the military administrator, and to give the whole credit to the commander in the field or the strategist. Thus, for example, in the conflicts between Prussia and Austria and between Prussia and France the successes of Prussia were no doubt due to Bismarck and Moltke, but no less was the credit due to Roon, the War Minister. Similarly, in the Manchurian war the successes of Japan were due not only to the responsible statesmen and strategists, but to the capable and experienced War Minister, Terauchi. In Germany and in Japan the functions of command and the duties of the General Staff, which include the preparation of war plans, and the control of training and war organization, are separated from the functions of military administration, the last being assigned to the War Minister. At the War Office a similar distinction is drawn, though not on identical lines owing to constitutional differences. It would be out of place to refer to the Indian system which has been so recently modified. Under whatever system, however, the functions of command, the duties of the General Staff, and military administration are carried

out at the headquarters of an army, whether they be united in one individual or separated among several individuals, one thing is certain, that to make an army efficient the staff which is charged with the preparation of war plans, war training, and war organization should work hand in hand with the staff and departments which deal with administrative duties. If they fail to work hand in hand both at headquarters, in divisions, and in smaller formations, dislocation immediately ensues. For that reason I think that the Staff College ought to aim at turning out officers who have not only studied the higher principles of the art of war, but who have been imbued with the necessity for working in complete harmony with their comrades in staff, departmental, and regimental employ, and who also have been instructed in the practical duties which will devolve upon them when they join the staff as junior general staff officers, or brigade majors, or deputy assistant adjutant-generals, or deputy assistant quartermaster-generals. General Braithwaite has rather trespassed into my domain by quoting from the Bible. The remarks of St. Paul regarding trumpet calls are apposite, though I did not know that he had ever distinguished himself as a soldier. Basing himself on this quotation, the lecturer has referred to the clarion notes with which the Government of a united nation should enunciate the national policy. I am a little doubtful about these notes, because it is not always desirable to disclose the policy beforehand and because from time to time international relations are subject to revision and modification. Besides, I think that it is opposed to the character of the British race to sound such clarion notes. It is, or used to be, our custom to make up our minds and hold our tongues. I may remind you that bull-dogs do not bark.

If I had occasion to consult the Bible on military subjects, I should be inclined to turn to the Old Testament. I should quote to you the injunction given to Joshua, the son of Nun, when he was called upon to undertake a hazardous enterprise of vital importance to his nation. The injunction is a short one—"only be strong and very courageous." This I take to mean strong enough to comply with the strategical principle of being capable of meeting the enemy in superior force at the decisive time and place, and courageous enough to defeat the enemy when encountered. There is a great deal in moral as well as physical courage. First count the cost as carefully as you like, and then, having made up your mind, stick to it. Hardly anything is more detrimental in war than vacillation, and I venture to think that His Excellency the Viceroy will agree that the same is the case in regard to policy.

I have inflicted on you a longer speech than I intended, and I now beg to propose for your unanimous concurrence a vote of thanks to General Braithwaite for his most interesting and instructive lecture. (Cheers.)



## AUTOMATIC RIFLES

BY CAPTAIN C. J. D. FREETH, R. A.

The automatic rifle is now engaging the attention of every civilised nation in the world, and the value of such an arm in war is a subject of frequent discussion in all military periodicals. Those averse to its adoption assert that the difficulties connected with the supply of ammunition render the introduction of an automatic rifle undesirable, and they affirm that no perfectly satisfactory and reliable weapon of this nature will ever be produced. It has also been urged as an argument against automatic rifles that "targets which would justify expenditure of ammunition at a rate of 20 or more rounds per minute, must be exceedingly rare in a modern battle"\* It is said that any rate of fire greater than that of the service rifle is impossible, as the heating of the barrel makes the rifle too hot to handle, besides rendering aiming practically impossible and extraction very difficult.

The advocates of an automatic rifle point out that the rapidity of fire possible with such a rifle places a valuable reserve of power in the hands of a commander, that the ability to shoot quickly does not by any means imply that rapid fire should be resorted to on all occasions, and that the efficient control of the expenditure of ammunition is entirely a matter of training. It must not be forgotten that the same difficulties in ammunition supply presented themselves on the introduction of the magazine rifle and on the adoption of a quick-firing field gun. And since in both those cases a solution of the difficulties has been found in efficient training, it would seem reasonable to suppose that the problem in the case of the automatic rifle is not altogether insoluble.

Be this as it may, it is universally admitted that, if any of the leading powers were to adopt an automatic rifle, all other nations would be compelled to follow their example. History has demonstrated that the moral influence bestowed upon an army by its possession of a superior weapon, is an asset which no country can afford to neglect.

Undoubtedly the advantages of a reliable automatic rifle are great. In the first place, the firer is relieved of all the fatigue caused by opening and closing the breech. Again, the absence of movement, except when charging the magazine, is a distinct aid to invisibility, and the power to shoot rapidly, when the necessity arises, is a valuable and indisputable advantage. "There is no need to loosen the grip of the right hand on the small of the butt in order to work the bolt. The rifle need not be taken down from the shoulder between the shots; therefore the firer's attention is not distracted from the object."†

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\* "Automatic Rifles," *Army Review*, January 1912.

† *Text-book of Small Arms*, 1909, p. 31.

These are a few of the arguments for and against the introduction of an automatic weapon from a tactical point of view. It is not, however, proposed to pursue this aspect of the case further, as the object of the article is to investigate the subject on its mechanical side, to study the attributes of a good automatic weapon, and to grasp the general principles on which such a weapon is constructed.

The first thing necessary is to have a perfectly clear conception of what an ideal automatic rifle for military purposes should be capable of. Perhaps the simplest way of acquiring this knowledge is by a perusal of one of the specifications for a military automatic rifle which have been drawn up by many of the European powers.

The following is the specification for the French automatic rifle. The specification may be taken as embodying the principal features demanded by the military authorities of all countries. It runs as follows :—

"1. *Loading.*—The weapon must be loaded from a magazine, or other analogous arrangement, holding 5 rounds at most.

"The system of automatic loading must admit of the contents of the magazine being fired by means of repeated pressure on the trigger, without taking the rifle from the shoulders.

"The weapon must (in addition to any automatic action) be capable of being used as a single loader, and of firing single shots.

"2. *General handiness.*—The weapon must be simple, strong, and easily kept in order. It should be capable of being stripped and reassembled, as far as possible, by hand.

"The breech mechanism must be protected against rain, dust, dirt, etc. Fouling due to prolonged firing, under normal service conditions, must not cause inconvenience either to the firer or his neighbours.

"Some form of hand-guard must be provided.

"The weapon must have a simple, strong, and reliable safety apparatus, easy to handle. It must be possible to unload the weapon quickly, at any moment.

"The rifle must be capable of firing blank for the purposes of drill and manœuvres.

"3. *Weight.*—The weight of the weapon, without bayonet and with the magazine empty, must not exceed 9-26 lbs. Whatever the weight, the recoil must not be excessive.

"4. *Weight of ammunition.*—The calibre must not be less than .2569 inches. Subject to this reservation, the ammunition should be as light as possible.

"5. *Length of weapon.*—The rifle must be of such length as to admit of its being fired in two ranks with the bayonet fixed. The total length must not be appreciably shorter than that of the weapons now in use.

"6. *Sighting.*—The rifle must be provided with fixed sights capable of being used at once (without preliminary handling) and such as to make the operation of taking aim, with regard to elevation

(which is more important than direction), as simple and easy as possible.

"There should also be some form of auxiliary sights, admitting of accurate fire at all ranges.

"7. *Rapidity of fire*.—This must be at least 20 rounds a minute in the lying down position.

"8. *Accuracy*.—The accuracy of any new weapon must be at least equal to that of the rifle at present in use.

"9. *Flatness of trajectory*.—The culminating point of the trajectory, for a range of 880 yards, shall not exceed a height of 5.25 feet. At medium and long ranges (up to 1,600 yards at least) the behaviour of the bullet must be at least as regular as that of the present rifle.

"10. *Penetration*.—This must be as great as possible, and at least equal to that of existing weapons."\*

It should be noted that there is no demand for a weapon which will fire the entire contents of the magazine by means of a single pressure of the trigger, but that one round should be discharged by each pressure of the trigger, the operations of extracting the empty cartridge case, reloading, closing the breech, and recocking being performed automatically. A hand weapon which continues firing like a machine gun as long as the trigger is pressed is unsuitable for military purposes owing to the impossibility of keeping the aim steady.

Although it cannot claim any great antiquity, the automatic rifle has nevertheless a longer and more interesting history than it is generally credited with. As long ago as 1854 the possibilities of automatic action were foreseen by the great steel inventor, Sir Henry Bessemer. In this year he took out a patent for what he described as an improvement "in constructing guns so that the reactive force of explosive gunpowder is made the agency of mechanism to reload and to discharge the gun."† The principle is shown applied to heavy guns, and it is believed that the inventor had not sufficient confidence in his crude ideas to embolden him to put them to a practical test.

From 1854 to 1883 little or no progress can be traced from the Patent Journals. But in 1883, the name of another great inventor Sir Hiram Maxim, looms out of the mist. He claimed to have invented a means of adopting ordinary single-loading rifles to fire as machine guns, and applies his patent‡ to the Winchester rifle, a bolt gun, and the Peabody Martini rifle. In the bolt gun, the whole contents of the magazine were intended to be fired by a single pressure of the trigger; but for the Winchester and Peabody Martini rifles, he only seems to have provided automatic extraction and ejection, the reloading having to be accomplished by hand.

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\* *La Revue d'Infanterie*. February 15th, 1910.

† Patent 1868/1354.

‡ Patent 3178/1883.



In these designs the safety arrangements are extremely crude and there would seem to be great danger of the weapon being accidentally fired. Nevertheless, this patent contains a clear conception of an automatic action, the recoil force being utilised for extracting the empty cartridge, "for bringing a fresh cartridge from the magazine into position, and for preparing the gun for the next discharge."<sup>\*</sup>

Another notable automatic rifle appears in the Patent Journal in 1891.<sup>†</sup> This rifle, which is also the product of Sir Hiram Maxim's brain, was designed on an entirely different principle to that on which his previous patent was based.

The motive power for this weapon was obtained by venting the barrel and utilising the force of the gas which passed through the vent to work a piston which operated the breech mechanism. Although this design is of a very elementary type and possesses many defects, among which the venting of the barrel too near the chamber was, perhaps, the worst, nevertheless it is by no means a bad example of the gas actuated system—a system which is not only considered promising but which has actually been adopted by the Mexican Government.

From this period right down to the present day a constantly increasing number of designs of automatic rifles have been patented yearly. From these it is proposed to select the systems which have proved themselves worthy of consideration, and to describe the general principles on which they are designed, omitting all reference to those details which do not belong exclusively to automatic rifles.

An automatic rifle has many parts which would be equally suitable for a magazine rifle, *e.g.*, the sights, safety catch, and possibly the butt; but there are other parts which have to be specially designed in order to obtain automatic action, namely, the breech action, the trigger mechanism, and the means by which the force of the explosion is applied to operate the breech.

It will be found most convenient to classify automatic rifles according to the means by which automatic action is obtained. There are in all five distinct classes, *viz* :—

- (1) The gas-operated rifle.
- (2) The rifle operated by an inertia block.
- (3) The rifle operated by a moving cap.
- (4) The toggle-jointed rifle.
- (5) The recoiling barrel rifle, (short recoil).
- (6) The recoiling-barrel rifle (long recoil).

It is now proposed to make the reader generally acquainted with the distinguishing features of automatic rifles, by describing briefly the operating mechanism, the action, and the trigger mechanism of a good typical example of each of the above classes.

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<sup>\*</sup>Patent 3178/1883.

<sup>†</sup>Patent 22895/1891.

## THE GAS-OPERATED RIFLE.

The first type which will be dealt with is that known as the gas-operated rifle. The Mondragon rifle is the rifle selected to illustrate this type. This weapon has been recently approved for issue to the Mexican Army, and it may therefore be assumed that its preliminary trials were not altogether without promise.

The automatic portions of the rifle are illustrated in figures 1, 2 and 3 (*vide* diagrams at end of this article).

Fig. 1 gives a sectional elevation of the muzzle end of the stock.

Fig. 2 is a plan of the connecting rod and side lever.

Fig. 3 shows the elevation and end view of the breech bolt.

The rifle is operated in the following manner:—When the bullet has travelled to within about six inches of the muzzle, the gas passes through a small vent (1) in the under side of the barrel into a cylinder or tube driving back a piston (2) and compressing a spiral spring (3) between the piston head and the end of the tube. The rear end of the piston rod is yoked to a connecting rod (4) and thus communicates its movement to a lever (5) which slides along a smooth surface on the right side of the body. There are two projections (6) and (7), on this sliding lever which engage helical slots (8) and (9) in the bolt (10). When the lever commences to move backwards, the projections (6) and (7), sliding in the slots (8) and (9), cause the bolt to revolve sufficiently to disengage the locking lugs (10') from the body, a spring pin (11) on the lever engages a hole (12) in the breech bolt, and the lever and bolt, thus connected, travel together until the magazine is completely disclosed. During this operation, the empty cartridge is extracted and the hammer\* is cocked. The spiral spring in the gas tube then drives forward the piston, which in turn closes and locks the bolt, at the same time feeding a fresh cartridge into the chamber.

In order to operate the rifle by hand, it is necessary to shut off the passage for the gas by turning the nut (15) through half a circle. This revolves the plug (14) so as to bring the channel (16) opposite the vent (1) and allows the gas to escape to the outer air. When the lever is gripped by the hand, a spring-operated catch (13) automatically disconnects the piston rod from the lever.

Figure 4 shows a sectional elevation of the trigger mechanism of the rifle. This is a very important part of any automatic rifle; for, in order to obtain single shots, it is necessary to arrange that the sear should be automatically released from the trigger immediately after the rifle has been fired. If this release of the sear were not arranged for, the action would not be recocked, and the striker would travel forward with the bolt. The result would be either continuous firing or missfires according to whether the force, with which the striker was pushed against the cap, was sufficient to fire it or not.

In this design the striker, which passes down the centre of the breech bolt, is operated by a hammer (1). When the bolt is driven

\* See page (353).

to the rear, the hammer (1) is forced back by the striker (3). The hammer, in its turn, drives back the rod (5) until the bent (4) engages the nose of the sear (6), and, at the same time, compresses the main spring (2).

When the trigger (7) is pulled, the rear end of the supporting pawl (8) is raised, thus forcing the nose of the sear out of the bent and allowing the hammer to be driven forward by the main spring. Almost simultaneously with the release of the hammer, a further slight movement of the trigger causes the pawl (8) to slip off the rear of the projecting end of the trigger, so that the sear is at once brought back to its original position by the sear spring (10), and is ready to retain the rod (5) on its being forced back. The sear spring (10) bears against the bar (11) of the trigger-guard bracket, which is stationary. When the trigger is released, the light co-spring (9) forces the pawl (8) back into its position on the top of the projecting end of the trigger.

This brief description of the Mondragon rifle should be sufficient to illustrate the general principles on which gas-actuated rifles are designed. The distinctive feature of this class is the vent near the muzzle of the barrel through which the gas passes in order to operate the action. The advantages commonly claimed for this class of weapon are simplicity and lightness. The chief disadvantage is the liability of the vent and piston cylinder becoming fouled and a consequent reduction in power, with the possible result that the breech bolt may not be withdrawn sufficiently far to pick up a fresh cartridge from the magazine.

#### THE RIFLE OPERATED BY AN INERTIA BLOCK

The next type to be described is that which is operated by means of an inertia block.

Although this method has met with some success in pistols and sporting rifles, it is generally considered unsuitable for military rifles on account of the extra weight which it entails, and also because in rifles designed on this principle it is difficult to comply with service safety conditions.

The Sjogun automatic rifle, which will now be described, is a good example of this class.

Figure 5 shows a sectional elevation of the inertia block and the breech block of this rifle, and figure (6) shows the corresponding plan.

The breech is here shown closed, as in the firing position. The breech block (3) is locked to the breech piece (4) by means of the locking levers (5). On the cartridge being fired by the striker (1), the recoil of the rifle causes the inertia block (2), which carries the firing and locking mechanism, to move forward a short distance with relation to the rifle itself. During this movement the sear (6) which is pivoted to the inertia block engages with the bent (4) on the striker, both the striker spring (7) and the recoil spring (8) being compressed. At the end of this forward movement the recoil spring (8), reasserting itself, forces the inertia block to the

rear. This brings the pin (9), which is a part of the inertia block, into contact with the overhanging ends (5') of the locking levers (5), thus disengaging the locking levers from the breech piece. The inertia block continues to travel to the rear by virtue of the momentum which it possesses, carrying with it the breech block and drawing back the connecting rod (10). To the front end of this connecting rod a spiral spring is attached. This spring, which is not shown on the drawings, lies under the barrel in a groove in the fore-end, its forward end being pinned to the fore-end.

When the inertia block has travelled sufficiently far to the rear, the empty cartridge case is extracted and the fresh one is picked up. The spiral spring, which has been extended during this backward movement, then reasserts itself, and the inertia block is returned to the firing position, the new cartridge being fed into the chamber and the breech closed.

Figure 7 shows the sectional elevation of the trigger mechanism of this rifle. It functions in the following manner:—A hooked pawl (2) controlled by a flat spring (3) is pivoted to the front end of the trigger (1). When the trigger is pulled, the hooked pawl draws the sear (4) out of engagement with the striker (5) leaving it free to be carried forward by the striker spring (6). While the sear (4) is being drawn down by the pawl (2), its nose (4) passes into the wedge-shaped opening (7) and causes the pawl to turn on its axis, thus disengaging it from the sear. This disengagement is so arranged as to take place immediately after the release of the striker, thus allowing the sear, aided by the spiral spring (8), to re-engage with the bent on the striker as soon as it is in the correct position to do so.

#### THE RIFLE OPERATED BY A MOVING CAP.

Although this system has been little exploited, it is held by some to be particularly hopeful on account of its simplicity and lightness. There is, however, an inherent objection to this class of rifle in that it necessitates a complicated and undesirable design of ammunition.

In order to illustrate this system the Roth automatic rifle will now be described.

Figure 8 is a longitudinal section of this rifle showing the breech action. The cartridge (1), which is of a special design, has a thick base with a deep cylindrical recess in it, at the bottom of which are the cap and anvil.

The breech bolt (2) is shown with its locking lugs (2') in the locked position, and the firing pin in the cocked position. This firing pin is in two parts (3) and (4). The front portion (4) is contained in the bolt head (5). It has a spiral spring (6) wound round it, which rests between a collar on the pin and a recess in the bolt head. The rear portion (3) of this firing pin is bored out to take the main spring (7) and is prevented from turning by guide ribs formed at its rear end, which move in longitudinal grooves in

the body (8).\* A projecting rib on the under side of the firing pin serves as a cocking bent to engage the sear.† The breech bolt (2) is rotated into the locked position by means of the rhomboidal-shaped studs (9) on the firing pin, which move in spiral grooves (11) cut in the breech bolt.

When the cartridge is fired by the firing pin (3) and (4), the cap is driven to the rear by the force of the explosion and carries with it the front portion (4) of the firing pin. This motion is imparted to the rear portion (3) of the firing pin; and the studs (9) travel through the longitudinal part of the grooves (10), subsequently passing through the spiral grooves (11) and thus unlocking the breech bolt. The bolt and firing pin then travel backwards together until the magazine is completely exposed.

During the recoil of the firing pin and bolt, the main spring is compressed against the rear end of the body, and the empty cartridge case is extracted and ejected. The bolt, having completed its backward movement, is then driven forward by the pressure of the main spring on the firing pin, and a fresh cartridge case is fed into the chamber. The firing pin (3) continues to move forward until it has turned the breech bolt into the locked position, when it is brought up by the engagement of the cocking nose with the sear. The action is then ready to be fired again by the trigger mechanism which will now be described.

Figure 9 gives a sectional elevation of this trigger mechanism.

The trigger (1), on being pulled, raises the rear end of a slotted lever (2) against the pressure of a spiral spring (3). This slotted lever is pivoted to the body (7) near its centre so that, when the rear end is raised, the front end, which rests on a spring pawl (4) pivoted to the sear (5), is depressed. During this movement, the sear, which is pivoted to the body (7), is revolved on its pivot, thus releasing the firing pin (6) and carrying the spring pawl (4) away from the slotted lever (2). Immediately after the release of the firing pin, the spring pawl slips off the inclined end of the slotted lever, and the sear returns to the firing position under the action of the spiral spring (8).

In order to open the breech by hand, the slide (10) is pulled back. This motion withdraws the firing pin (6) which carries back the breech bolt with it. The breech is held back by the T-shaped lever (9).

#### THE TOGGLE-JOINTED RIFLE.

The Browning automatic pistol is so well known that it may seem superfluous to describe in detail the toggle-joint system on which this class of weapon is designed. Nevertheless, as the application of this system to rifles is somewhat distinctive, it will be advisable to outline its salient features.

Figure 10 gives a longitudinal sectional elevation of the action of this rifle.

\* These ribs and grooves are not shown on the drawing.

† See Fig. 9.

The body is formed in two parts. The upper part (1') recoils while the lower part (2) is stationary. The upper part is screwed to the barrel (1) and slides on the lower part, carrying the barrel with it. There is a collar (not shown) fixed to the barrel near the breech, which encircles a tubular magazine (3) on which it slides. This collar is operated by the forward end of the barrel return spring (4). The breech block (5) slides in the recoiling part (1') of the body, and is connected to the rear of the latter by two links (6) and (7). The forward link (6) is connected to the breech block, the rearward link (7) being pivoted to the body by the pin (7'). The links are pivoted to each other by a pin (8) which is slightly below the other two pivots when the breech is closed, thus ensuring its not flying up under the pressure from the explosion of the cartridge. These links are held down, in the closed position, by a spring plunger (10) acting on a cam plate (11) which is rigidly fixed to the recoiling part of the body. A long rod or hammer (12) operates the firing pin (13). The front end of this hammer works in guides in the breech block, and the rear end is rounded to seat in a plunger (15) which slides in a tube (16) and is controlled by the main spring (17). This tube passes down the butt of the rifle.

On the explosion of the cartridge the barrel and the recoiling part of the body are forced back to the limit of their travel (as shown by the dotted lines at A), the barrel-return spring (4) and the main spring being compressed. At the same time the cam surface (7') on the rear link meets the shoulder (2') on the fixed part (2) of the body. This causes the pivot (8) to be thrown upwards, forcing the plunger (10) over the projection on the cam plate (11). The momentum imparted to the breech block then causes the movement to continue until the toggle-joint assumes the position shown by the dotted lines at B, the breech being then completely open. The barrel and recoiling part of the body will then have resumed their forward position under the action of the barrel-return spring (4).

As the middle joint (8) of the links is being raised from the firing position, the link (6) revolves on its forward pivot. By this means two little projecting pieces (6') on the lower front end of this link are revolved backwards. These projecting pieces, meeting the stud (12') on the hammer (12), force the hammer back until the bent (12'') is engaged by the sear (14), which is pivoted to the breech block.

During the rearward movement of the breech block the fired cartridge case is extracted and ejected, and a fresh cartridge is drawn from the magazine and raised to the loading position by suitable mechanism (not shown). Under the action of the main spring the breech block is then carried forward by the hammer and the links are lowered into their locked position. The sear, also going forward, is again ready to be operated by the trigger mechanism.

This trigger mechanism consists of a trigger (19), which is pivoted near its centre to the trigger guard. To its front end a

hooked pawl (18) is hinged. This pawl, which is controlled by a flat spring, draws the sear (14) out of engagement with the bent (12') on the hammer when the trigger is pulled. After the rifle is fired, the sear recoils with the breech block, thus releasing itself from the hooked pawl. Then, the sear having resumed the firing position, it is again caught up by the pawl on the release of the trigger.

There are finger pieces (9) on the link (7), by which the breech can be opened by hand.

Although there is much in this class of weapon to recommend it, it is doubtful whether the toggle mechanism can ever be made capable of the long travel, which a high velocity rifle cartridge requires, without making it unduly clumsy and heavy; and it is probably owing to this reason that it has not hitherto been more extensively developed.

The two classes of automatic rifles remaining to be described are both recoil-acted rifles in the proper sense of the word. They differ, however, in one important feature; for, whereas in the one class the barrel recoil is only sufficient to perform the unlocking of the bolt, in the other class the barrel and bolt recoil together for the full travel of the bolt. These two systems have been exploited to a greater degree than any of the other systems, and many good rifles of both classes have been the result; nevertheless the mechanism of these rifles is, as a rule, considerably more complicated than that of any of the rifles already described. This is especially the case with the Bräuning automatic rifle, of which the principle will now be roughly described. It is, however, to be feared that neither the description nor the drawings are sufficiently detailed to enable the reader to grasp all the minutiae of the design.

#### THE RECOILING-BARREL RIFLE (SHORT RECOIL).

Figure 11 shows a sectional plan of the Bräuning automatic rifle and figure 12 is a sectional elevation.

The recoiling barrel (1) is screwed to the breech casing (2) which reaches to within a short distance of the rear cap (4). The barrel and the breech casing, sliding in the breech frame (3), recoil together through the short space A between the casing and the cap. They are returned to the firing position by the spring (19) (details not shown).

The breech block (5) is bored out for the firing pin (6), and the locking levers (7) are pivoted in slots in its forward end. These locking levers project sideways and bear on resistance shoulders (8) in the breech casing, when they are in the locked position. A hollow cylindrical cap (9) at the rear of the block contains the main spring (10). Near the middle of the block two little rocking levers (11') are pivoted; and it is by means of these levers that the firing pin is withdrawn into the cocked position. The firing pin is held in the cocked position by means of a T-shaped cocking lever (11) which engages with a cocking bent (12) on the top of the breech block. This T-shaped lever is pivoted to the firing pin, and

it has a vertical leg passing through a slot in the rear portion of the firing pin. It is controlled by a small spiral spring (13). The body of the firing pin is slotted horizontally to clear the heels (7') of the locking levers in their disengaged position, the slot being arranged so that the heels cannot enter it until the firing pin has been withdrawn a short distance. The effect is that it is impossible to fire the rifle unless these heels have been withdrawn from the needle which ensures the breech block being locked at the moment of firing.

The trigger (16) and the sear (18) are pivoted to the breech frame. The trigger operates the sear (18) by means of a spring pin (17) which allows the sear nose to trip past it immediately after the needle has been released. The sear operates the vertical leg of the cocking lever (11). The spiral spring (19), bearing on the shoulders of the trigger and the sear, controls their position, as well as returning the barrel and breech casing to the firing position. When the trigger is pressed, the sear raises the cocking lever (11), thus releasing the needle, which plies forward and fires the cartridge under the action of the main spring (10). At the same time the rocking levers (11') are forced into the position shown by the dotted lines in figure 12. On the recoil of the barrel and breech casing, the top arms of the levers (11'), bearing against the front edge (3') of the breech frame, cause the levers to rotate, thus withdrawing the needle in the breech block. This movement of the needle allows the locking levers to close into the slot in the needle, which they start doing as soon as their rear outer corners impinge on the angular recesses (3') in the breech frame. When the closing in movement is complete and the breech block has been disconnected from the breech casing, the impetus given to the breech block carries it to the rear end of the frame, the breech closing spring (14) being thereby compressed. During this movement, the fired cartridge is extracted and ejected; and the top arms of rocking levers (11) are forced down by the inclined surfaces (3') on the breech frame, thus withdrawing the firing pin sufficiently far for it to be cocked by the cocking lever's engagement with the cocking bent (12). After the barrel and casing have been released from the breech block, they are returned to the firing position by the spring (19). The breech block having reached the end of its travel, then picks up a fresh cartridge, and resumes the closed position under the influence of the breech closing spring (14). The locking levers are then forced into the locked position by the spiral springs (7') and the cocking lever is once more above the front toe of the sear. On the trigger being released, it again picks up the sear, and the rifle is ready to be fired again.

The action can be operated by hand by means of the handle and slide (15).

There is a slight modification of this short recoil principle, which consists in dividing the barrel into two parts, one part consisting of the barrel proper, and the other of a small liner to the barrel which



extends from the breech to just beyond the mouth of the chamber. The barrel is fixed and the liner, sliding in the barrel, recoils a **short** distance with the bolt in a similar manner to that which obtains with a short-recoil barrel.

The device has for its object the elimination of the disadvantages of a recoiling barrel, but it introduces other objectionable features in that it weakens the barrel at the chamber and makes an escape of gas possible between the liner and the barrel.

#### THE RECOILING-BARREL RIFLE (LONG RECOIL).

The final type to be described is that in which the barrel recoils with the bolt to the full extent of the travel of the bolt. The example of this type selected for description is a design patented by Mauser, who is one of the best known and most prolific of automatic rifle inventors. He explains at some length that he has adopted this system as he considers it is the only method which has any prospect of ultimate success.

Figure 13 shows a longitudinal vertical section of the breech action which functions as follows:—

The force of recoil drives the barrel (1) and the breech bolt (3) to the rear of the body (2), thus compressing both the barrel-return spring and the breech closing spring which are located in the breech casing and are not shown in the drawing. The projecting rear end of the rotary sleeve (3') of the bolt is then stopped by the breech casing and driven into the bolt. This sleeve has helical ribs (5) on it which engage with corresponding grooves in the bolt head (4); and, as the sleeve (3') is constrained from turning, the bolt head is forced to rotate, and is thus unlocked from the barrel. The barrel is then driven forward by the barrel return spring, while the bolt is retained in the rearward position by an arresting lever, which is so arranged that it releases the bolt as soon as the barrel has returned to the firing position. The breech bolt is then driven forward by the breech-closing spring, and a fresh cartridge is loaded into the chamber. When the bolt head (4) has gone home in the barrel, it is free to turn into the locked position. This rotation is effected by means of the compressed spring (6), which forces back the rotary sleeve (3'), thus turning the bolt into the locked position.

The firing pin is made in two parts, the front part forms a bearing for the main spring (8), and the rear part has a head with projecting lugs on the under side. To those lugs the cocking lever (9) is pivoted, a spiral spring at the rear end keeping it in contact with the bolt. During the opening of the breech, when the rotary sleeve has been driven into the bolt by the rear end of the breech casing, the needle is forced out to the rear by the bolt head (4), and is held there by the nose (9') of the cocking lever butting against the corner (3') of the rotary sleeve. It is finally released by the sear, which, under the action of the trigger, presses up the

rear projecting end (9") of the cocking lever and allows the needle to fly forward under the action of the main spring (8) and to fire the cartridge.

The trigger mechanism is of the ordinary lever type, except that the axis hole for the sear is elongated to allow the trigger nose to trip.

This rifle can also be operated by hand.

The reader has now had presented to him the various systems by which automatic rifle designers have sought success; and he will naturally wonder why, with all these excellent designs, every civilised army has not already been armed with a satisfactory automatic rifle of some sort.

The answer to this question is that the difficulty in deciding on a suitable cartridge is largely though not entirely responsible for the delay. From a glance at the conditions for the French automatic rifle (given on pages 346—347) it will be seen that there are stipulations as to flatness of trajectory, calibre, and weight. This is also so with regard to the prospective automatic rifles for all the great powers. It is easily understood that all nations desire the new weapon, when it is introduced, to be an advance in every way. They therefore consider it necessary to combine with an automatic action the small calibre and flat trajectory which is now considered by experts to be indispensable in any up-to-date rifle.

This desire for an improved cartridge is sensible and perfectly justifiable. But it is not generally realised how greatly it handicaps a designer. It means that the automatic action cannot be proceeded with until the ammunition and rifle barrel have been settled. But it may be asked why an automatic action could not be worked out for one of the existing barrels with its established ammunition; and why, when this has been perfected, the principle could not be applied to a new barrel and new ammunition. This could not, however, be done. If it could, the problem of an automatic rifle would be already solved. It would only be necessary to select one of the many satisfactory automatic pistols, and to design a rifle on the same principle. But such a procedure would be doomed to failure, for not only does the smallest alteration in any portion of a design frequently spell failure for the whole invention, but the higher the power of a weapon the more difficult does it become to get reliable automatic action.

This question of a higher power cartridge affects the rifle designer in many ways. In the first place, a more powerful cartridge naturally implies a larger charge and consequently a cartridge case of greater capacity. This practically necessitates a longer cartridge. Now a longer cartridge means a longer magazine and a greater travel of the bolt in order to enable it to pick up and to load a fresh cartridge.

It may be seen by examining any of the designs already given, how much a slight addition to the length of the cartridge would affect the length of the action and the weight and handiness of the

weapon, and this is quite apart from the fact that the longer the travel of the bolt, the greater the work that must be done in opening and closing it. In fact, any automatic mechanism is called upon to do far more for a long cartridge than for a short one.

Again, the designer of an automatic rifle, who has a say to design his ammunition, is practically obliged to try his weapon with ammunition which is only in an experimental stage, and which besides being hard to procure in any quantity, is liable to be irregular in ballistics and untrue to gauge. The result naturally is that the rifle is subjected to uneven pressures, and has to contend with cartridges which are hard to extract. Now a rifle which is worked by hand suffers comparatively little from the bolt being occasionally a little stiff to work, because the firer has the intelligence and ability to put the necessary extra force into the operation of opening the breech. But it is a very different matter with an automatic rifle. A reserve force for working the bolt is possible only to a very limited extent, for it must necessarily be applied to every withdrawal of the bolt, so that, if a large amount of reserve force were provided, the rifle action would get badly knocked about when the extraction was normal.

It may, therefore, be accepted that good reliable ammunition is absolutely necessary before the value of an automatic rifle can be ascertained. Moreover there must be plenty of this ammunition, for it is not possible to pronounce with certainty on the value of a rifle till a large number of rounds have been fired from it. Reliability, freedom from fouling, and excessive wear of the parts can only be learnt from lengthy firing trials.

Bearing all these points in mind, the would-be inventor of an automatic rifle for the British Army would do well to await the issue of the new magazine rifle which Lord Haldane has announced is shortly to make its appearance. The issue of this rifle will probably be accompanied by a plentiful supply of ammunition which will be free from the many little irregularities which are almost unavoidable in the early issues of any new store, but which are frequently, as in the present case, of vital importance.\*

The aspiring inventor should watch carefully all advances in automatic weapons both at home and abroad. He should study the Patent Journals and should note the principles involved in any patent which he considers promising. Having done all this, he should then be in a position to set about the principles on which he would hope to make his rifle, so that, when the new ammunition is issued, he will be in a position to complete the details of his design, and, as soon as his first model has been made, he will be able to determine its value by a firing test without having to incur the enormous trouble and expense of designing and manufacturing his own ammunition.

\* It is possible that the new magazine rifle will be issued with a supply of ammunition which will be free from the many little irregularities which are almost unavoidable in the early issues of any new store, but which are frequently, as in the present case, of vital importance.

FIG. 1

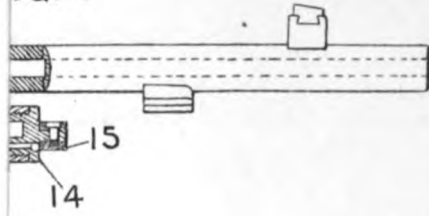


FIG. 2

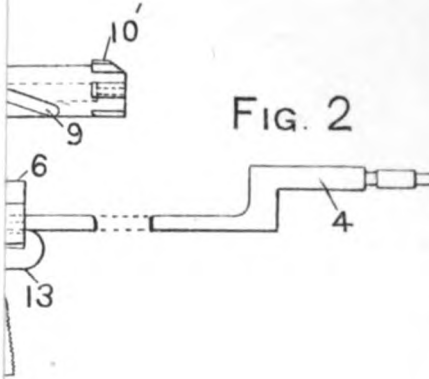
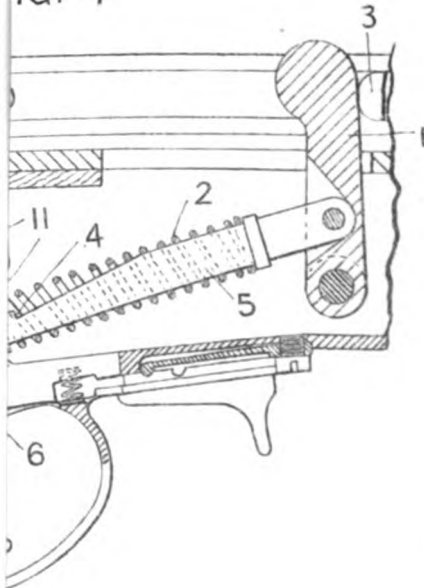


FIG. 4



to the rear, the hammer (1) is forced back by the striker (3). The hammer, in its turn, drives back the rod (5) until the bent (4) engages the nose of the sear (6), and, at the same time, compresses the main spring (2).

When the trigger (7) is pulled, the rear end of the supporting pawl (8) is raised, thus forcing the nose of the sear out of the bent and allowing the hammer to be driven forward by the main spring. Almost simultaneously with the release of the hammer, a further slight movement of the trigger causes the pawl (8) to slip off the rear of the projecting end of the trigger, so that the sear is at once brought back to its original position by the sear spring (10), and is ready to retain the rod (5) on its being forced back. The sear spring (10) bears against the bar (11) of the trigger-guard bracket, which is stationary. When the trigger is released, the light coil spring (9) forces the pawl (8) back into its position on the top of the projecting end of the trigger.

This brief description of the Mondragon rifle should be sufficient to illustrate the general principles on which gas-actuated rifles are designed. The distinctive feature of this class is the vent near the muzzle of the barrel through which the gas passes in order to operate the action. The advantages commonly claimed for this class of weapon are simplicity and lightness. The chief disadvantage is the liability of the vent and piston cylinder becoming fouled and a consequent reduction in power, with the possible result that the breech bolt may not be withdrawn sufficiently far to pick up a fresh cartridge from the magazine.

#### THE RIFLE OPERATED BY AN INERTIA BLOCK.

The next type to be described is that which is operated by means of an inertia block.

Although this method has met with some success in pistols and sporting rifles, it is generally considered unsuitable for military rifles on account of the extra weight which it entails, and also because in rifles designed on this principle it is difficult to comply with service safety conditions.

The Sjögun automatic rifle, which will now be described, is a good example of this class.

Figure 5 shows a sectional elevation of the inertia block and the breech block of this rifle; and figure (6) shows the corresponding plan.

The breech is here shown closed, as in the firing position. The breech block (3) is locked to the breech piece (4) by means of two locking levers (5). On the cartridge being fired by the striker (1), the recoil of the rifle causes the inertia block (2), which carries the firing and locking mechanism, to move forward a short distance with relation to the rifle itself. During this movement the sear (6) which is pivoted to the inertia block re-engages with the bent on the striker, both the striker spring (7) and the recoil spring (8) being compressed. At the end of this forward movement, the recoil spring (8), reasserting itself, forces the inertia block to the

rear. This brings the pin (9), which is a part of the inertia block, into contact with the overhanging ends (5') of the locking levers (5), thus disengaging the locking levers from the breech piece. The inertia block continues to travel to the rear by virtue of the momentum which it possesses, carrying with it the breech block and drawing back the connecting rod (10). To the front end of this connecting rod a spiral spring is attached. This spring, which is not shown on the drawings, lies under the barrel in a groove in the fore-end, its forward end being pinned to the fore-end.

When the inertia block has travelled sufficiently far to the rear, the empty cartridge case is extracted and the fresh one is picked up. The spiral spring, which has been extended during this backward movement, then reasserts itself, and the inertia block is returned to the firing position, the new cartridge being fed into the chamber and the breech closed.

Figure 7 shows the sectional elevation of the trigger mechanism of this rifle. It functions in the following manner:—A hooked pawl (2) controlled by a flat spring (3) is pivoted to the front end of the trigger (1). When the trigger is pulled, the hooked pawl draws the sear (4) out of engagement with the striker (5) leaving it free to be carried forward by the striker spring (6). While the sear (4) is being drawn down by the pawl (2), its nose (4) passes into the wedge-shaped opening (7) and causes the pawl to turn on its axis, thus disengaging it from the sear. This disengagement is so arranged as to take place immediately after the release of the striker, thus allowing the sear, aided by the spiral spring (8), to re-engage with the bent on the striker as soon as it is in the correct position to do so.

#### THE RIFLE OPERATED BY A MOVING CAP.

Although this system has been little exploited, it is held by some to be particularly hopeful on account of its simplicity and lightness. There is, however, an inherent objection to this class of rifle in that it necessitates a complicated and undesirable design of ammunition.

In order to illustrate this system the Roth automatic rifle will now be described.

Figure 8 is a longitudinal section of this rifle showing the breech action. The cartridge (1), which is of a special design, has a thick base with a deep cylindrical recess in it, at the bottom of which are the cap and anvil.

The breech bolt (2) is shown with its locking lugs (2') in the locked position, and the firing pin in the cocked position. This firing pin is in two parts (3) and (4). The front portion (4) is contained in the bolt head (5). It has a spiral spring (6) wound round it, which rests between a collar on the pin and a recess in the bolt head. The rear portion (3) of this firing pin is bored out to take the main spring (7) and is prevented from turning by guide ribs formed at its rear end, which move in longitudinal grooves in

the body (8).\* A projecting rib on the under side of the firing pin serves as a cocking bent to engage the sear.† The breech bolt (2) is rotated into the locked position by means of the rhomboidal-shaped studs (9) on the firing pin, which move in spiral grooves (11) cut in the breech bolt.

When the cartridge is fired by the firing pin (3) and (4), the cap is driven to the rear by the force of the explosion and carries with it the front portion (4) of the firing pin. This motion is imparted to the rear portion (3) of the firing pin; and the studs (9) travel through the longitudinal part of the grooves (10), subsequently passing through the spiral grooves (11) and thus unlocking the breech bolt. The bolt and firing pin then travel backwards together until the magazine is completely exposed.

During the recoil of the firing pin and bolt, the main spring is compressed against the rear end of the body, and the empty cartridge case is extracted and ejected. The bolt, having completed its backward movement, is then driven forward by the pressure of the main spring on the firing pin, and a fresh cartridge case is fed into the chamber. The firing pin (3) continues to move forward until it has turned the breech bolt into the locked position, when it is brought up by the engagement of the cocking nose with the sear. The action is then ready to be fired again by the trigger mechanism which will now be described.

Figure 9 gives a sectional elevation of this trigger mechanism.

The trigger (1), on being pulled, raises the rear end of a slotted lever (2) against the pressure of a spiral spring (3). This slotted lever is pivoted to the body (7) near its centre so that, when the rear end is raised, the front end, which rests on a spring pawl (4) pivoted to the sear (5), is depressed. During this movement, the sear, which is pivoted to the body (7), is revolved on its pivot, thus releasing the firing pin (6) and carrying the spring pawl (4) away from the slotted lever (2). Immediately after the release of the firing pin, the spring pawl slips off the inclined end of the slotted lever, and the sear returns to the firing position under the action of the spiral spring (8).

In order to open the breech by hand, the slide (10) is pulled back. This motion withdraws the firing pin (6) which carries back the breech bolt with it. The breech is held back by the T-shaped lever (9).

#### THE TOGGLE-JOINTED RIFLE.

The Browning automatic pistol is so well known that it may seem superfluous to describe in detail the toggle-joint system on which this class of weapon is designed. Nevertheless, as the application of this system to rifles is somewhat distinctive, it will be advisable to outline its salient features.

Figure 10 gives a longitudinal sectional elevation of the action of this rifle.

\* These ribs and grooves are not shown on the drawing.

† See Fig. 9.

The body is formed in two parts. The upper part (1') recoils while the lower part (2) is stationary. The upper part is screwed to the barrel (1) and slides on the lower part, carrying the barrel with it. There is a collar (not shown) fixed to the barrel near the breech, which encircles a tubular magazine (3) on which it slides. This collar is operated by the forward end of the barrel return spring (4). The breech block (5) slides in the recoiling part (1') of the body, and is connected to the rear of the latter by two links (6) and (7). The forward link (6) is connected to the breech block, the rearward link (7) being pivoted to the body by the pin (7'). The links are pivoted to each other by a pin (8) which is slightly below the other two pivots when the breech is closed, thus ensuring its not flying up under the pressure from the explosion of the cartridge. These links are held down, in the closed position, by a spring plunger (10) acting on a cam plate (11) which is rigidly fixed to the recoiling part of the body. A long rod or hammer (12) operates the firing pin (13). The front end of this hammer works in guides in the breech block, and the rear end is rounded to seat in a plunger (15) which slides in a tube (16) and is controlled by the main spring (17). This tube passes down the butt of the rifle.

On the explosion of the cartridge the barrel and the recoiling part of the body are forced back to the limit of their travel (as shown by the dotted lines at A), the barrel-return spring (4) and the main spring being compressed. At the same time the cam surface (7') on the rear link meets the shoulder (2') on the fixed part (2) of the body. This causes the pivot (8) to be thrown upwards, forcing the plunger (10) over the projection on the cam plate (11). The momentum imparted to the breech block then causes the movement to continue until the toggle-joint assumes the position shown by the dotted lines at B, the breech being then completely open. The barrel and recoiling part of the body will then have resumed their forward position under the action of the barrel-return spring (4).

As the middle joint (8) of the links is being raised from the firing position, the link (6) revolves on its forward pivot. By this means two little projecting pieces (6'') on the lower front end of this link are revolved backwards. These projecting pieces, meeting the stud (12') on the hammer (12), force the hammer back until the bent (12'') is engaged by the sear (14), which is pivoted to the breech block.

During the rearward movement of the breech block, the fired cartridge case is extracted and ejected, and a fresh cartridge is drawn from the magazine and raised to the loading position by suitable mechanism (not shown). Under the action of the main spring the breech block is then carried forward by the hammer and the links are lowered into their locked position. The sear, also going forward, is again ready to be operated by the trigger mechanism.

This trigger mechanism consists of a trigger (19), which is pivoted near its centre to the trigger guard. To its front end a



hooked pawl (18) is hinged. This pawl, which is controlled by a flat spring, draws the sear (14) out of engagement with the bent (12') on the hammer when the trigger is pulled. After the rifle is fired, the sear recoils with the breech block, thus releasing itself from the hooked pawl. Then, the sear having resumed the firing position, it is again caught up by the pawl on the release of the trigger.

There are finger pieces (9) on the link (7), by which the breech can be opened by hand.

Although there is much in this class of weapon to recommend it, it is doubtful whether the toggle mechanism can ever be made capable of the long travel, which a high velocity rifle cartridge requires, without making it unduly clumsy and heavy; and it is probably owing to this reason that it has not hitherto been more extensively developed.

The two classes of automatic rifles remaining to be described are both recoil-acted rifles in the proper sense of the word. They differ, however, in one important feature; for, whereas in the one class the barrel recoil is only sufficient to perform the unlocking of the bolt, in the other class the barrel and bolt recoil together for the full travel of the bolt. These two systems have been exploited to a greater degree than any of the other systems, and many good rifles of both classes have been the result; nevertheless the mechanism of these rifles is, as a rule, considerably more complicated than that of any of the rifles already described. This is especially the case with the Bräuning automatic rifle, of which the principle will now be roughly described. It is, however, to be feared that neither the description nor the drawings are sufficiently detailed to enable the reader to grasp all the minutiae of the design.

#### THE RECOILING-BARREL RIFLE (SHORT RECOIL).

Figure 11 shows a sectional plan of the Bräuning automatic rifle and figure 12 is a sectional elevation.

The recoiling barrel (1) is screwed to the breech casing (2) which reaches to within a short distance of the rear cap (4). The barrel and the breech casing, sliding in the breech frame (3), recoil together through the short space A between the casing and the cap. They are returned to the firing position by the spring (19) (details not shown).

The breech block (5) is bored out for the firing pin (6), and the locking levers (7) are pivoted in slots in its forward end. These locking levers project sideways and bear on resistance shoulders (8) in the breech casing, when they are in the locked position. A hollow cylindrical cap (9) at the rear of the block contains the main spring (10). Near the middle of the block two little rocking levers (11') are pivoted; and it is by means of these levers that the firing pin is withdrawn into the cocked position. The firing pin is held in the cocked position by means of a T-shaped cocking lever (11) which engages with a cocking bent (12) on the top of the breech block. This T-shaped lever is pivoted to the firing pin, and

it has a vertical leg passing through a slot in the rear portion of the firing pin. It is controlled by a small spiral spring (13). The body of the firing pin is slotted horizontally to clear the heels (7') of the locking levers in their disengaged position, the slot being arranged so that the heels cannot enter it until the firing pin has been withdrawn a short distance. The effect is that it is impossible to fire the rifle unless these heels have been withdrawn from the needle which ensures the breech block being locked at the moment of firing.

The trigger (16) and the sear (18) are pivoted to the breech frame. The trigger operates the sear (18) by means of a spring pin (17) which allows the sear nose to trip past it immediately after the needle has been released. The sear operates the vertical leg of the cocking lever (11). The spiral spring (19), bearing on the shoulders of the trigger and the sear, controls their position, as well as returning the barrel and breech casing to the firing position. When the trigger is pressed, the sear raises the cocking lever (11), thus releasing the needle, which plies forward and fires the cartridge under the action of the main spring (10). At the same time the rocking levers (11') are forced into the position shown by the dotted lines in figure 12. On the recoil of the barrel and breech casing, the top arms of the levers (11'), bearing against the front edge (3') of the breech frame, cause the levers to rotate, thus withdrawing the needle in the breech block. This movement of the needle allows the locking levers to close into the slot in the needle, which they start doing as soon as their rear outer corners impinge on the angular recesses (3'') in the breech frame. When the closing in movement is complete and the breech block has been disconnected from the breech casing, the impetus given to the breech block carries it to the rear end of the frame, the breech closing spring (14) being thereby compressed. During this movement, the fired cartridge is extracted and ejected; and the top arms of rocking levers (11) are forced down by the inclined surfaces (3') on the breech frame, thus withdrawing the firing pin sufficiently far for it to be cocked by the cocking lever's engagement with the cocking bent (12). After the barrel and casing have been released from the breech block, they are returned to the firing position by the spring (19). The breech block having reached the end of its travel, then picks up a fresh cartridge, and resumes the closed position under the influence of the breech closing spring (14). The locking levers are then forced into the locked position by the spiral springs (7') and the cocking lever is once more above the front toe of the sear. On the trigger being released, it again picks up the sear, and the rifle is ready to be fired again.

The action can be operated by hand by means of the handle and slide (15).

There is a slight modification of this short recoil principle, which consists in dividing the barrel into two parts, one part consisting of the barrel proper, and the other of a small liner to the barrel which

extends from the breech to just beyond the mouth of the chamber. The barrel is fixed and the liner, sliding in the barrel, recoils a short distance with the bolt in a similar manner to that which obtains with a short-recoil barrel.

The device has for its object the elimination of the disadvantages of a recoiling barrel, but it introduces other objectionable features in that it weakens the barrel at the chamber and makes an escape of gas possible between the liner and the barrel.

#### THE RECOILING-BARREL RIFLE (LONG RECOIL).

The final type to be described is that in which the barrel recoils with the bolt to the full extent of the travel of the bolt. The example of this type selected for description is a design patented by Mauser, who is one of the best known and most prolific of automatic rifle inventors. He explains at some length that he has adopted this system as he considers it is the only method which has any prospect of ultimate success.

Figure 13 shows a longitudinal vertical section of the breech action which functions as follows:—

The force of recoil drives the barrel (1) and the breech bolt (3) to the rear of the body (2), thus compressing both the barrel-return spring and the breech closing spring which are located in the breech casing and are not shown in the drawing. The projecting rear end of the rotary sleeve (3') of the bolt is then stopped by the breech casing and driven into the bolt. This sleeve has helical ribs (5) on it which engage with corresponding grooves in the bolt head (4); and, as the sleeve (3') is constrained from turning, the bolt head is forced to rotate, and is thus unlocked from the barrel. The barrel is then driven forward by the barrel return spring, while the bolt is retained in the rearward position by an arresting lever, which is so arranged that it releases the bolt as soon as the barrel has returned to the firing position. The breech bolt is then driven forward by the breech-closing spring, and a fresh cartridge is loaded into the chamber. When the bolt head (4) has gone home in the barrel, it is free to turn into the locked position. This rotation is effected by means of the compressed spring (6), which forces back the rotary sleeve (3'), thus turning the bolt into the locked position.

The firing pin is made in two parts, the front part forms a bearing for the main spring (8), and the rear part has a head with projecting lugs on the under side. To those lugs the cocking lever (9) is pivoted, a spiral spring at the rear end keeping it in contact with the bolt. During the opening of the breech, when the rotary sleeve has been driven into the bolt by the rear end of the breech casing, the needle is forced out to the rear by the bolt head (4), and is held there by the nose (9') of the cocking lever butting against the corner (3') of the rotary sleeve. It is finally released by the sear, which, under the action of the trigger, presses up the

rear projecting end (9") of the cocking lever and allows the needle to fly forward under the action of the main spring (8) and to fire the cartridge.

The trigger mechanism is of the ordinary lever type, except that the axis hole for the sear is elongated to allow the trigger nose to trip.

This rifle can also be operated by hand.

The reader has now had presented to him the various systems by which automatic rifle designers have sought success; and he will naturally wonder why, with all these excellent designs, every civilised army has not already been armed with a satisfactory automatic rifle of some sort.

The answer to this question is that the difficulty in deciding on a suitable cartridge is largely though not entirely responsible for the delay. From a glance at the conditions for the French automatic rifle (given on pages 346—347) it will be seen that there are stipulations as to flatness of trajectory, calibre, and weight. This is also so with regard to the prospective automatic rifles for all the great powers. It is easily understood that all nations desire the new weapon, when it is introduced, to be an advance in every way. They therefore consider it necessary to combine with an automatic action the small calibre and flat trajectory which is now considered by experts to be indispensable in any up-to-date rifle.

This desire for an improved cartridge is sensible and perfectly justifiable. But it is not generally realised how greatly it handicaps a designer. It means that the automatic action cannot be proceeded with until the ammunition and rifle barrel have been settled. But it may be asked why an automatic action could not be worked out for one of the existing barrels with its established ammunition; and why, when this has been perfected, the principle could not be applied to a new barrel and new ammunition. This could not, however, be done. If it could, the problem of an automatic rifle would be already solved. It would only be necessary to select one of the many satisfactory automatic pistols, and to design a rifle on the same principle. But such a procedure would be doomed to failure, for not only does the smallest alteration in any portion of a design frequently spell failure for the whole invention, but the higher the power of a weapon the more difficult does it become to get reliable automatic action.

This question of a higher power cartridge affects the rifle designer in many ways. In the first place, a more powerful cartridge naturally implies a larger charge and consequently a cartridge case of greater capacity. This practically necessitates a *longer* cartridge. Now a longer cartridge means a longer magazine and a greater travel of the bolt in order to enable it to pick up and to load a fresh cartridge.

It may be seen by examining any of the designs already given, how much a slight addition to the length of the cartridge would affect the length of the action and the weight and handiness of the

weapon, and this is quite apart from the fact that the longer the travel of the bolt, the greater the work that must be done in opening and closing it. In fact, any automatic mechanism is called upon to do far more for a long cartridge than for a short one.

Again, the designer of an automatic rifle, who has also to design his ammunition, is practically obliged to try his weapon with ammunition which is only in an experimental stage, and which, besides being hard to procure in any quantity, is liable to be irregular in ballistics and untrue to gauge. The result naturally is that the rifle is subjected to uneven pressures, and has to contend with cartridges which are hard to extract. Now a rifle which is worked by hand suffers comparatively little from the bolt being occasionally a little stiff to work, because the firer has the intelligence and ability to put the necessary extra force into the operation of opening the breech. But it is a very different matter with an automatic rifle. A reserve force for working the bolt is possible only to a very limited extent, for it must necessarily be applied to every withdrawal of the bolt, so that, if a large amount of reserve force were provided, the rifle action would get badly knocked about when the extraction was normal.

It may, therefore, be accepted that good reliable ammunition is absolutely necessary before the value of an automatic rifle can be ascertained. Moreover there must be plenty of this ammunition, for it is not possible to pronounce with certainty on the value of a rifle till a large number of rounds have been fired from it. Reliability, freedom from fouling, and excessive wear of the parts can only be learnt from lengthy firing trials.

Bearing all these points in mind, the would-be inventor of an automatic rifle for the British army would do well to await the issue of the new magazine rifle which Lord Haldane has announced is shortly to make its appearance. The issue of this rifle will probably be accompanied by a plentiful supply of ammunition which will be free from the many little irregularities which are almost unavoidable in the early issues of any new store; but which are frequently, as in the present case, of vital importance.\*

The aspiring inventor should watch carefully all advances in automatic weapons both at home and abroad. He should study the Patent Journals and should note the principles involved in any patent which he considers promising. Having done all this, he should then be in a position to sketch out the principles on which he would hope to make his rifle; so that, when the new ammunition is issued, he will be in a position to complete the details of his design; and, as soon as his first model has been made, he will be able to determine its value by a firing test, without having to incur the enormous trouble and expense of designing and manufacturing his own ammunition.

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\* It is pleasing to note that the ammunition for the new magazine rifle will be in a form adapted to an automatic rifle. *I*de speech by Lord Haldane in the House of Lords dated 21st February 1912.

FIG. 1

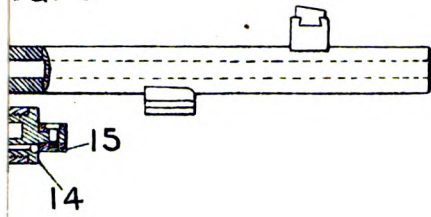


FIG. 2

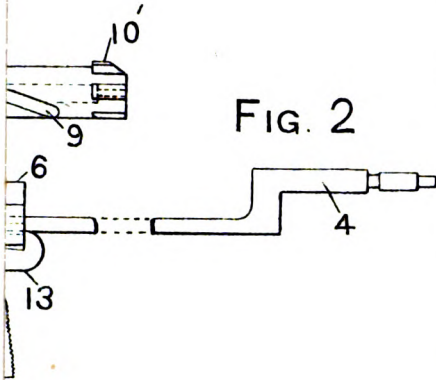


FIG. 4

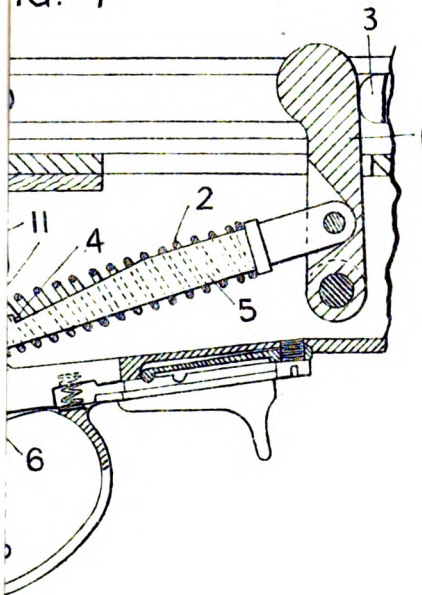




FIG. 5

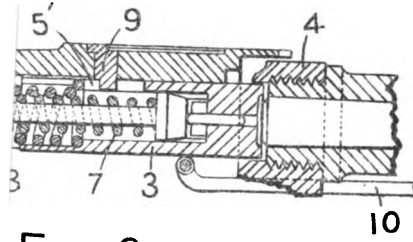


FIG. 6

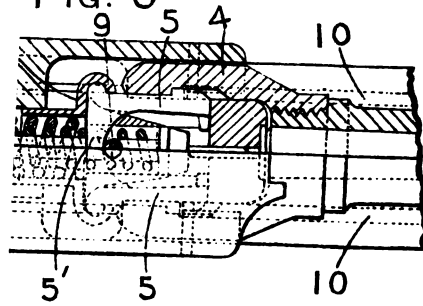
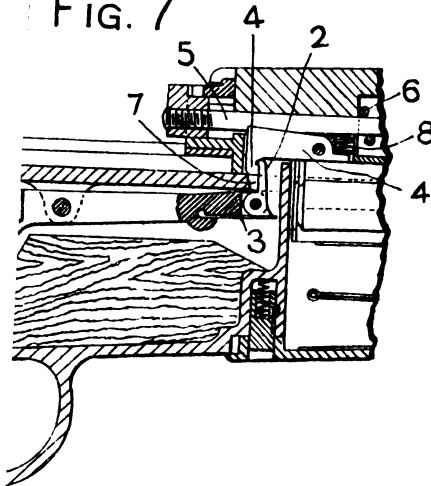


FIG. 7





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FIG. 8

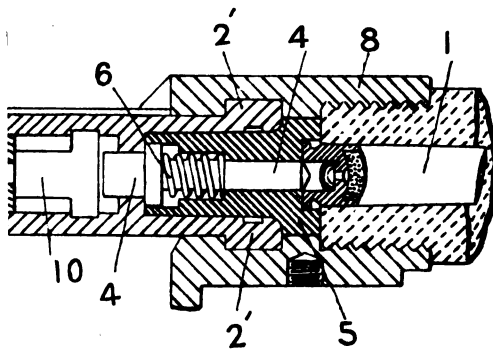


FIG. 9

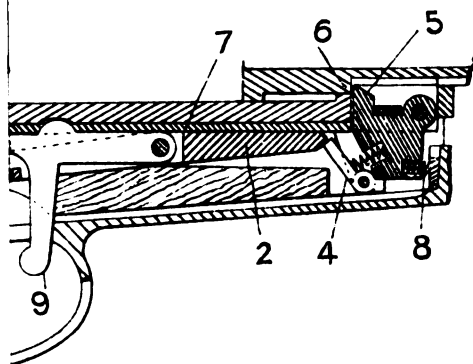




FIG. 10

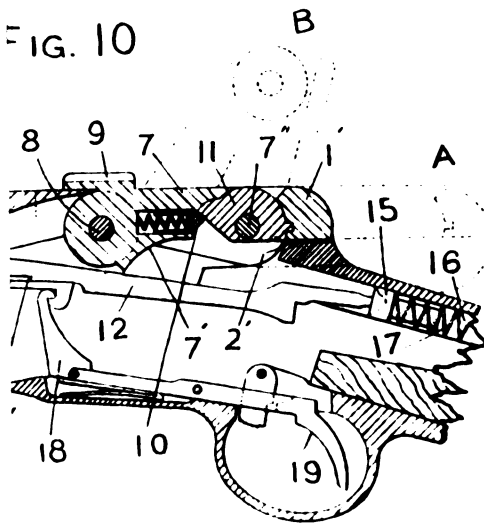
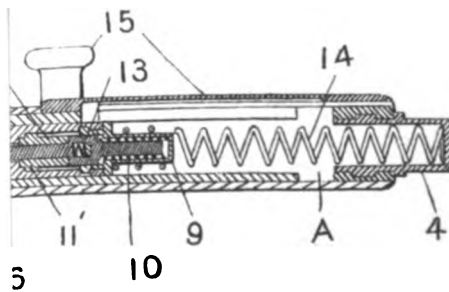
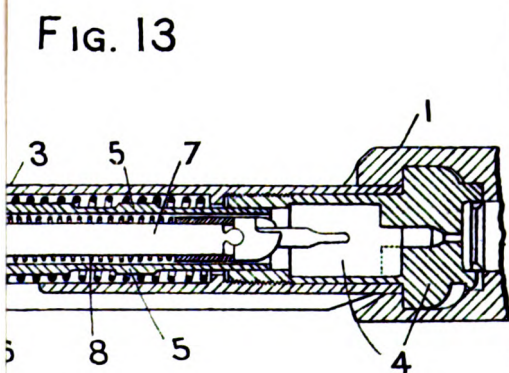
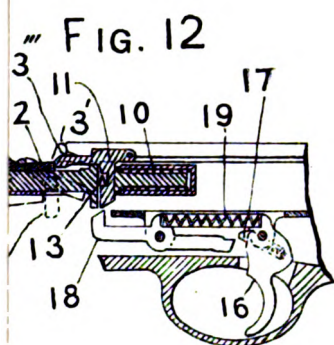


FIG. 11







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It is hoped that, in spite of its necessary brevity, this article may be of some assistance to expert rifle designers, and that to the general reader it will not be without interest.

My thanks are due to Mr. E. A. Reavitt, principal draughtsman at the Royal Small Arms Factory, to whom I am indebted for all the drawings which appear in this article, as well as for much other valuable assistance.



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## THE BLESSINGS OF WAR

By **Lieut.-Colonel G. de S. Barrow**

on Tuesday, 18th June 1912.

Lieut.-General Sir P. H. Lake, K.C.M.G., C.B., Chief of the  
General Staff, in the chair.

**THE CHAIRMAN:** Your Excellency, Ladies and Gentlemen,—May I introduce Colonel Barrow to you. When we found quite suddenly that the lecturer who was to have addressed us this afternoon was prevented from doing so by illness, Colonel Barrow said he would step into the gap and give us the lecture that is proposed for this afternoon, *viz.*, the Blessings of War.

I fancy that Colonel Barrow is very well known to most of the people of Simla, so I will ask him to commence his lecture without further remarks.

**THE LECTURER:** We are continually hearing in these days of the Blessings of Peace and the Curse of War. Newspapers, speeches, pamphlets, pulpits, Hague Conferences, never weary of this expression—never lose an opportunity to moralise on this theme. And not war itself only, but the instruments by which war is conducted, *viz.*, armies and navies are included in the general condemnation, and their necessity reluctantly admitted as one of the greatest blots which mar our imperfect human state. Sometimes a sort of excuse for their existence is advanced in the shape of a gigantic paradox to the effect that 'the best security for peace is to increase one's power of making war' or 'the best way to secure peace is to make victory certain.'

Now this constant repetition that war is barbarous, is wicked, or to be avoided at all costs, has a deleterious effect on a nation and on humanity at large; it is contrary to progress, to civilisation, to the teachings of history and to truth itself; while, on the other hand, the apotheosis of peace is the most deteriorating, enervating thing that can happen to us, the greatest curse of all.

The result of this reiteration is a weakening of the moral fibre, a lessening of that readiness to fight for our rights, and the slow destruction of that spirit which has made our empire what it is, and from which those people who now decry war, and are ever ready to raise a sneer at what they like to call 'jingoism,' have derived their present state of security, wealth, comfort, culture and ease. As Carlyle says, "People talk against wars and militarism. If it had not been for the invasion of the Romans and of William the Conqueror, of the Wars of the Roses and of King and Parliament, we should still be Jutes and Angles living in pot-bellied complacency."

I do not exaggerate one bit in saying this. We are almost ashamed to sing "Rule Britannia" in these days. And there are men held in honour in our country to-day, the little Bernard Shaws of England, who lose no opportunity of sneering and jeering at the slightest manifestation of patriotism. Their voices are listened to attentively by thousands, and yet it is but the squeaking of rats compared with the voices of our Shakespeares and Bacons—true patriots and gallant champions of our country's greatness.

For what is war? Before going further we should consider this. What is its origin? Why do we fight?

Curiously enough, the origin of war is based on Fear. It is important to bear this in mind because Fear is an elemental—perhaps the most elemental of the factors which go to make up our moral nature. Fear springs from the desire of life, the struggle for existence, the survival of the fittest, and hence from the development of the savage state into that in which we now find ourselves. Moreover Fear is a constant factor. It is with us now just as strong and ruling an influence in our lives, whether as individuals, or nations, as ever it was in the days of primeval man. And this being so, its effect on the causes and results of war remains as powerful as ever.

Formerly man had to fight in order to live—he had to fight for his food or to save himself from becoming the food of others. It was the desire to live which was the cause of all the earlier invasions which brought the barbarian hordes from the damp and dark forest of Central, and the cold and barren steppes of Eastern Europe to overrun the old Roman Empire—now the victim of luxury and wealth.

Subsequently, as a result of the evolution of society, of the introduction of agriculture and industries as against a purely pastoral and nomadic existence, and of the growth of the communal idea, it was found inconvenient for all men to fight, and therefore some were employed to fight whilst leaving the others undisturbed in the pursuit of their peaceful avocations. After a time there sprang from this an artificial state of affairs and men were hired by rich communities for the sole purpose of fighting and often with no regard to their nationality. And it is curious to note that this artificial state existed, in the most marked degree, concurrently with the period of the wars of Religion and of Dynasties—unnatural wars, fought for other reasons than those waged for the purpose of existence. But nothing which is artificial lasts; and so eventually we find all the continental nations returning to a realisation of the state from which they started and recognising that it is the duty of every man capable of bearing arms to fight, if necessary, for the defence of his country, the country having now taken the place of the tribe and the individual. And the crude desire of fighting for food becomes developed into the virtues of Patriotism, love of liberty and country, but always with the same origin—Fear—as we have only to look at the present state of Europe and our own foreign relations to see.

Next, as to the acts of war, and in connection with these we see a strange thing, but it is only strange because we so often overlook it. We find, taking alone and at random some of the decisive battles of the world, that they have been victories for those who have first been victorious in a higher degree than their opponents over Fear.

At Issus, Alexander, with the flower of his cavalry, charges right into the heart of the hostile masses and puts Darius and his immense army to flight. Alexander is the victor.

At Cannæ Hannibal falls back, but the retrograde movement, instead of dissolving itself into flight, is arrested by the firmness of his soldiers. Hannibal is the victor.

At Lützen Gustavus Adolphus falls, and instead of his troops being seized with despair and flight they are transported with the desire for vengeance, and falling on the imperialists it is the latter who flee. Gustavus Adolphus, though dead, is the victor.

At Austerlitz the French right is stretched out in a thin line of from one to two men per yard, a wonderful extension for those days. It is attacked by the heavy Russian columns and holds its ground unflinchingly, and Napoleon is the victor.

In Manchuria, the Japanese, in spite of all the modern long range guns, the howitzers, the quick-firers, the magazine rifles, the machine-guns, the mines, the impassable obstacles and the entrenchments, move on till they plunge their bayonets into the bodies of their adversaries—and the Japanese are the victors.

And on this day 97 years ago the British squares were standing firm—firm in their confidence in their great commander—against the onslaught of an army which contained many of the finest and most experienced soldiers in the world, and directed by the most wonderful military genius of modern times.

And everywhere and in every place and at every time we see the same phenomenon—men standing to meet death or running to embrace it, and by their readiness to die gaining the victory for their leader or for their country or their cause. And this in no way detracts from the merit of the leader: Hannibal alone could have created the victors of Cannæ; Gustavus Adolphus alone those of Lützen; Napoleon alone those of Austerlitz; Wellington those of Waterloo; and Patriotism, Loyalty and *Bushido* those of Port Arthur, Liao Yang and Mukden.

The origin then of war is Fear; its prosecution is based on the overcoming of Fear, *i.e.*, on self-sacrifice.

Now there are three distinct attributes of war, which are at the same time interdependent, *viz.*—

The material.

The intellectual.

The moral or spiritual.

The material side of war everyone understands and [therefore] there is nothing much to be said about it. Everyone knows that one man cannot stand up physically against ten; or that two men, other things being equal, will defeat one. This is embodied in

Napoleon's dictum—"Victory lies on the side of the big battalions."

But it is not only a question of the largest numbers. If war consisted of material only, then it would be a question of who could put the greatest numbers into the field. The victory might be awarded straight away to the side which could produce the most men, horses, and guns, without going to the trouble of fighting for decision which would be a foregone conclusion.

Certainly, one cannot depreciate the value of numbers—they play a great rôle in war; they can of themselves be a cause of victory or defeat. But they are not everything and there are other and even more important factors, of which intellectuality is one; and this is also embodied in one of Napoleon's maxims, *viz.*, "the men are nothing, the man is everything" or "an army of sheep led by a lion will beat an army of lions led by a sheep."

General Bonnal, for some years commandant of the French Staff College, and whose writings have had a great influence on French military thought, writes in his "*Manœuvre de Montenotte*":—"A principle of mechanics, *viz.*, the principle of the economy of force, applied to the art of war, has thus become, by the genius of Bonaparte, the origin of combinations without a parallel in history, manœuvres which have opened to our armies the gates of all the capitals of Europe and secured for our Eagles a triumphal march of nearly a quarter of a century. The French commanded by the feeble generals of Louis XV were thoroughly beaten at Rossbach because the Prussians were better prepared, instructed, and commanded. At Jena and Auerstadt the French army, better organized and commanded than the Prussians, inflicted an unparalleled disaster on the latter. In 1870 the contrary happened; then the great difference between the armies in organization lay the other way." And 'organization' and 'command' and the predominant part they play in war is the *leitmotiv* of his 'Frœshwiller' and of all his military works.

General Zarlinden, another distinguished French soldier, writes:—"It was the Berlin Staff College which beat us in 1870; it was the same instrument, imported into Tokio, which was the real cause of the Japanese success, and it is our own Staff College which will assure the salvation of our country."

Not only in France but in Germany and amongst all the military nations of the present day 'intellectuality' is bracketed with 'numbers' first in order of importance. Endeavours are constantly made to reduce war to a science; the human mind is always seeking for a formula; there is a constant search for a doctrine.

During long periods of peace it will be found that in the military as in the civil life materialism and the intellectual qualities take a higher place than the moral; the former are looked on as the more important things. It is in peace that wealth and scientific, literary, and artistic merit reap the rewards. It is the millionaire,

the banker, the author, the actor, and the actress, who, with certain notable exceptions, receive the peerage, the popular applause, and the honour, the last-named being depicted in the illustrated papers in strange postures and with great display of teeth and leg; and there is no opportunity for the recognition of the moral qualities. This is inevitable—it is difficult to see how it could be otherwise; and at the same time it is all the more necessary for us to bear in mind that there is one other and still more important attribute for an army in order to conquer, and for a nation in order to survive, and that is the ‘moral qualities’—once more embodied in a saying of Napoleon, “The moral is to the physical as three to one.”

However much we may disagree with some of Tolstoi's views we cannot deny that he was a man gifted with the powers of looking very deeply into the heart of things. In his ‘Physiology of War’ he says, “The science of war judges of the strength of an army by its numbers. Napoleon has said ‘the God of Battles is always on the side of the greatest number of battalions.....’ Military science having discovered from innumerable historical examples that masses of troops do not necessarily correspond with the strength of armies, and that small bodies have frequently defeated greater, admits the existence of an unknown factor which it seeks to explain sometimes by geometrical combinations, sometimes by differences in armaments, but above all by what seems the simplest solution, *viz.*, by the difference in genius of the opposing commanders. But it is in vain that one attributes this faculty to the factor in question, the results are not in accordance with facts. One must renounce this idea, which is so cherished by the hero worshippers, that the unknown quantity, the mathematical ‘ $\times$ ’, lies in the dispositions taken by the generals, whether they have been well conceived and well executed. The ‘ $\times$ ’ is the spirit of the troops. The men who are more anxious to save their own lives are superior to those who think to escape safe and sound. The spirit of the army is the factor which multiplied by the mass gives the victory.”

And old Souvaroff said, “Give me men ready to break their necks and I will give you good tactics.”

But without going so far as Tolstoi in the low place he assigns to the skill and power of manœuvre of the leader, there is a general tendency in peace time to rank this too high. What after all is it which we really admire and which, if we think of it, was the real cause, say, of the French victory at Austerlitz and of the Confederates in the Valley Campaign? In the former was it the idea of deceiving the enemy and luring him in one direction while falling on him suddenly from another direction with the mass of the troops? Lots of people might really have thought of doing that. No it was, in the first place, the fascination, the personal magnetism which Napoleon exercised over his men, that enabled the plan to be carried to a successful conclusion, which could induce a few of his men to await unmoved and in expectation of almost certain annihilation the onslaught of the mass of the Russian forces, while

the remainder of the French army, imbued with the same feelings, went forward in irresistible offence. Take away this personal magnetism of the leader and this enthusiasm of the soldier and Austerlitz would have been a French defeat.

Again, in the Valley Campaign, where would Jackson have been with his misleading and mystifying of the enemy, without the personal power he exercised over his men and which enabled him to make those wonderful marches which alone rendered it possible for him to act up to his famous maxim

And how otherwise are we to account for the success of the raw levies of the French Revolution against the trained and disciplined armies of the other Continental States, led by men steeped in strategical and tactical lore.

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It is the will to conquer which is the principal thing in war. And this 'will' springs from three sources—

- (1) A desire for action.
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War then, we see, is not a mere business of murder and barbarity. However much men like Mr. Norman Angell may sneer, may point out that the soldier uses more bad language than any other class of man, and quote some officer as saying 'War is a dirty business.' The fact remains that war, taken as a whole, has a moral side which far exceeds the material, and that a man who gives up his life because it is his duty, or in the cause of patriotism, or even in that spirit of adventure which laid the foundations of the empire, does the greatest thing a man is capable of doing.

Let us now turn to the effect of war on nations.

The arguments brought against war may be summed up generally as follows:—

- (a) It is a barbarous act; war is murder on a large scale; it is wicked.
- (b) It is injurious to trade and commerce.
- (c) The upkeep of armaments constitutes a tremendous drain on the resources of a country.
- (d) It takes men away from more useful employments.
- (e) It is a cruel waste of life.

As to the first of these, the barbarity of war, we have already dealt with that.

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And curiously enough, the loss of life in battle has decreased rather than increased, with the greater deadliness of the weapons in use, as the following figures show:—

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As to the cost of the upkeep of armaments. They cost money it is true; but after all, though the sums total seem enormous, they are small compared with the total revenue and income of a nation, and less than the average man, worked out as a percentage, deems it prudent to invest in life and fire insurances. Moreover it must not be overlooked that they give employment to thousands who would otherwise be thrown on the already overstocked labour markets of the world. They tend in wages, pay, etc., to distribute the wealth of a nation.

As to its taking men away from the more useful employments, *i.e.*, employments which would bring in more wealth to the country. This may be true, though the nations which have adopted universal service do not seem to suffer very greatly in this respect. On the other hand, it gives employment for a time to hundreds of thousands who might not easily find employment otherwise, and opens a career to those who wish to adopt it permanently. It also gives a moral and physical training to the manhood of a nation which is incalculable.

In truth, all these complaints about the injury to trade and commerce, the cost of armaments, and the taking of men away from profitable pursuits, have their origin in one of the most ignoble desires, *viz.*, the acquisition of gold. The creed of these opponents of war, not of all, but of a very large number, the majority, perhaps, is contained in the words of an old music hall song I remember hearing as a boy:—

"Gold, gold, gold, I love to hear it jingle,  
Gold, gold, gold, its power is untold,  
We men strive hard to store it,  
And women, they adore it,  
And there's nothing in the whole, wide world,  
Like gold, gold, gold."

Money will buy us comforts and luxuries as well as the 'necessaries' of life, clothes and food, matinée hats as large as windmills, and motor-cars; but, as the author of "The Valor of Ignorance" says, "Gold illimitable cannot buy valor, nor self-sacrifice, nor endurance, nor discipline." It is doubtful even whether material progress and mechanical inventions make the world any happier, and they certainly do not make the world. A man is no nearer heaven because he flies in an aeroplane 3,000 feet high in the air—at least, he may be nearer heaven in a way, but not in the way I mean.

And lastly we come to a consideration of the waste of life entailed by war. The thing to consider is, 'Is a life lost necessarily a life wasted?'

Let us take a recent case most fresh in our memories. At the time of the Titanic disaster newspapers and people talked much of the terrible waste of life. There was a terrible and sad *loss* of life I grant you; there was also waste of life, such as in the case of those 53 poor little children who went down without ever having had a chance in this world. But it was by no means *all* a waste of life. Men like Colonel Astor and Mr. Isidore Strauss, women like the wife of the latter, have in their deaths done far more for humanity than they were ever able to do in their lives, notwithstanding all their millions. Men and women standing to lose every good thing in the world which money can procure, who can meet death as calmly and bravely as they and many others on the same occasion did, leave an example, an influence, and a fame behind them far transcending anything which money can buy.

And I am sure that all the music of all the Paderewskis and Kubeliks in the world is not so fine and so far-reaching as was the music of that Titanic band, as it played its own funeral march to the grave.

Those who rail against the wickedness of war and extol the advantages of peace because of the prosperity the latter brings us, are sometimes apt to adopt a high moral tone towards the advocates of war, *i.e.*, of justifiable war; and towards us humble instruments by which war is conducted. And yet are they justified in this, even from a religious point of view? What do Christians consider the highest act of the Master? Did he advocate the amassing of wealth? Did he exhibit mechanical genius? Is he worshipped for his miracles? No, he is worshipped and believed in on account of his sublime self-sacrifice, and who will dare to say, Christian or non-Christian, that his death was a useless waste of life!

No life is a wasted life if it is given up for a great idea or in a noble cause, and there are no nobler causes than those of Patriotism and Duty, for in these cases a man lays down his life for his fellow countrymen.

It is just this nobility of war and the sacrifices it entails which brings out the best of a nation and has forced Ruskin, that

man of peace, to say, "that all great nations learned their truth of word and strength of thought in war; that they were nourished in war and wasted by peace; taught by war and deceived by peace; trained by war and betrayed by peace; in a word that they were born in war and expired in peace."

And now, turning for a moment to the question of arbitration, which the peace-makers would substitute for war. Is it a practicable substitute? Nature and progress all depend on the system of evolution, not on devolution. You must gradually improve from the smaller to the greater, and not *vice versa*. This being so, society must first arrive at a state in which the policeman no longer finds a place. All disputes within the state must be settled by arbitration. A thief must steal by arbitration. That is, having announced his desire for something belonging to another, the question must be settled by a court of arbitration. This is of course absurd. Not more absurd, however, than where two nations are concerned. One covets a piece of land belonging to another—Tripoli, Korea—which it deems necessary for security, for its future development, or on which to dump its surplus population. How can such a case be arbitrated for? The nation which requires extra territory for its expansion and existence, why should it be arbitrated for any more than the poor wretch who steals for bread. No doubt, there are some national disputes, just as there are some civil disputes, which can be arbitrated for. But you can never arbitrate for criminal offences, or for those which are the direct outcome of man's elemental nature—fear, self-preservation, and the struggle for existence which is at the root of all progress, which is the primal law of nature, and which all the peace conferences, international codes, lawyers, and judges in the world, now and for evermore, can never alter.

But Mr. Norman Angell denies that man's nature has not changed. He says it has changed, and to support his statements he brings forward such arguments as that the 'city clerk no longer brains his mother and serves her up for dinner,' or that 'Lords Roberts and Kitchener do not drive their triumphal cars over the bodies of young girls, in the fashion that the leaders of the old Northmen drove their ox waggons over the bodies of their enemies' womenkind. Such arguments are really too puerile to require answering. Till Mr. Norman Angell can show that envy, hatred, and malice, deceit and fraud, anger and passion, loyalty and love, no longer exist, he cannot prove that human nature has changed. And, if it ever did change to this extent, what a dull crowd we should be!

Human nature remains the same, and whatever difference there is, is in the manner of procedure. Now, instead of running our sword through the man who wrongs us, we sue him in the law courts and obtain damages; and honour is valued by pounds, shillings and pence. A necessary change no doubt, but a questionable improvement in human nature.

Could a nation like the German nation ever have been forged out of peaceful arbitration? Was it not war, and war only, which made it possible to bring about German unity and the tremendous results commercial and other, which have resulted therefrom? So also could the British Empire ever have been formed if the extension of British rule and influence had depended on arbitration? And can any one deny that the results which have been obtained at the cost of war and bloodshed have outweighed a thousand-fold, both morally and materially, the temporary expenditure in life and money?

The truth is, this cry for the peaceful settlement of all disputes is a craven cry. I do not believe that, generally speaking, it is based on a high moral view, but that, however sincere certain individuals may be in their advocacy of it, it is born of selfishness and fear. We, having got all we can out of war, now call for arbitration. Can we expect younger nations, in the full strength of early manhood, and with life before them, to look at it from this point of view? They have nothing to gain from arbitration, and we think that we have everything to lose from war. That is the difference.

Some people, in support of their arguments against war, point to the fact that wars are less frequent than formerly, and attribute this to the growing feeling against war as civilisation progresses. This decrease in the actual number of wars, which at the same time are sufficiently frequent if we only look back the last 50 years or so, can easily be accounted for. Formerly there were many more independent States to wage war. Now the lesser have been absorbed in the greater, largely as a result of war, and there are fewer units to engage each other. On the other hand, the wars when they now come are fought out on a far greater scale than formerly.

History is so full of examples of the inestimable advantages which have been brought to nations and humanity at large by war that it is difficult to know where to begin or end when dealing with this subject. It certainly cannot be dealt with adequately within the short compass of a lecture. So I will confine myself to pointing out that the advantages do not lie only with the victorious but even with the defeated nations. That is, it is not victory only which brings blessings, but war itself, quite apart from victory. Where should we British now be had England never been invaded and conquered, first by the Romans, then by the Normans? In what elegant condition Carlyle has already told us. Have we gained or suffered most by those defeats?

Where was the seed sown from which that most advanced and intellectual German Empire sprang? Was it not sown in defeat and disaster at Jena? Can any one say that France is any the worse to-day for her humiliation in 1870? Did she not arise therefrom regenerated, with renewed youth and vigour? And the spirit in which she paid up her indemnity to Germany was worth more to her a hundred times than the value of the gold itself.

And finally, has Russia gained or suffered most from her Manchurian defeats? I may be wrong, but it seems to me that that

I do not exaggerate one bit in saying this. We are almost ashamed to sing "Rule Britannia" in these days. And there are men held in honour in our country to-day, the little Bernard Shaws of England, who lose no opportunity of sneering and jeering at the slightest manifestation of patriotism. Their voices are listened to attentively by thousands, and yet it is but the squeaking of rats compared with the voices of our Shakespeares and Bacon—true patriots and gallant champions of our country's greatness.

For what is war? Before going further we should consider this. What is its origin? Why do we fight?

Curiously enough, the origin of war is based on Fear. It is important to bear this in mind because Fear is an elemental—perhaps the most elemental of the factors which go to make up our moral nature. Fear springs from the desire of life, the struggle for existence, the survival of the fittest, and hence from the development of the savage state into that in which we now find ourselves. Moreover Fear is a constant factor. It is with us now just as strong and ruling an influence in our lives, whether as individuals, or nations, as ever it was in the days of primeval man. And this being so, its effect on the causes and results of war remains as powerful as ever.

Formerly man had to fight in order to live—he had to fight for his food or to save himself from becoming the food of others. It was the desire to live which was the cause of all the earlier invasions which brought the barbarian hordes from the damp and dark forest of Central, and the cold and barren steppes of Eastern Europe to overrun the old Roman Empire—now the victim of luxury and wealth.

Subsequently, as a result of the evolution of society, of the introduction of agriculture and industries as against a purely pastoral and nomadic existence, and of the growth of the communal idea, it was found inconvenient for all men to fight, and therefore some were employed to fight whilst leaving the others undisturbed in the pursuit of their peaceful avocations. After a time there sprang from this an artificial state of affairs and men were hired by rich communities for the sole purpose of fighting and often with no regard to their nationality. And it is curious to note that this artificial state existed, in the most marked degree, concurrently with the period of the wars of Religion and of Dynasties—unnatural wars, fought for other reasons than those waged for the purpose of existence. But nothing which is artificial lasts; and so eventually we find all the continental nations returning to a realisation of the state from which they started and recognising that it is the duty of every man capable of bearing arms to fight, if necessary, for the defence of his country, the country having now taken the place of the tribe and the individual. And the crude desire of fighting for food becomes developed into the virtues of Patriotism, love of liberty and country, but always with the same origin—Fear—as we have only to look at the present state of Europe and our own foreign relations to see.

Next, as to the acts of war, and in connection with these we see a strange thing, but it is only strange because we so often overlook it. We find, taking alone and at random some of the decisive battles of the world, that they have been victories for those who have first been victorious in a higher degree than their opponents over Fear.

At Issus, Alexander, with the flower of his cavalry, charges right into the heart of the hostile masses and puts Darius and his immense army to flight. Alexander is the victor.

At Cannæ Hannibal falls back, but the retrograde movement, instead of dissolving itself into flight, is arrested by the firmness of his soldiers. Hannibal is the victor.

At Lützen Gustavus Adolphus falls, and instead of his troops being seized with despair and flight they are transported with the desire for vengeance, and falling on the imperialists it is the latter who flee. Gustavus Adolphus, though dead, is the victor.

At Austerlitz the French right is stretched out in a thin line of from one to two men per yard, a wonderful extension for those days. It is attacked by the heavy Russian columns and holds its ground unflinchingly, and Napoleon is the victor.

In Manchuria, the Japanese, in spite of all the modern long range guns, the howitzers, the quick-firers, the magazine rifles, the machine-guns, the mines, the impassable obstacles and the entrenchments, move on till they plunge their bayonets into the bodies of their adversaries—and the Japanese are the victors.

And on this day 97 years ago the British squares were standing firm—firm in their confidence in their great commander—against the onslaught of an army which contained many of the finest and most experienced soldiers in the world, and directed by the most wonderful military genius of modern times.

And everywhere and in every place and at every time we see the same phenomenon—men standing to meet death or running to embrace it, and by their readiness to die gaining the victory for their leader or for their country or their cause. And this in no way detracts from the merit of the leader: Hannibal alone could have created the victors of Cannæ; Gustavus Adolphus alone those of Lützen; Napoleon alone those of Austerlitz; Wellington those of Waterloo; and Patriotism, Loyalty and *Bushido* those of Port Arthur, Liao Yang and Mukden.

The origin then of war is Fear; its prosecution is based on the overcoming of Fear, i.e., on self-sacrifice.

Now there are three distinct attributes of war, which are at the same time interdependent, viz.—

The material.

The intellectual.

The moral or spiritual.

The material side of war everyone understands and [therefore there is nothing much to be said about it. Everyone knows that one man cannot stand up physically against ten; or that two men, other things being equal, will defeat one. This is embodied in

Napoleon's dictum—"Victory lies on the side of the big battalions."

But it is not only a question of the largest numbers. If war consisted of material only, then it would be a question of who could put the greatest numbers into the field. The victory might be awarded straight away to the side which could produce the most men, horses, and guns, without going to the trouble of fighting for decision which would be a foregone conclusion.

Certainly, one cannot depreciate the value of numbers—they play a great rôle in war; they can of themselves be a cause of victory or defeat. But they are not everything and there are other and even more important factors, of which intellectuality is one; and this is also embodied in one of Napoleon's maxims, *viz.*, "the men are nothing, the man is everything" or "an army of sheep led by a lion will beat an army of lions led by a sheep."

General Bernal, for some years commandant of the French Staff College, and whose writings have had a great influence on French military thought, writes in his "*Manœuvre de Monténotte*"—"A principle of mechanics, *viz.*, the principle of the economy of force, applied to the art of war, has thus become, by the genius of Bonaparte, the origin of combinations without a parallel in history, manœuvres which have opened to our armies the gates of all the capitals of Europe and secured for our Eagles a triumphal march of nearly a quarter of a century. The French commanded by the feeble generals of Louis XV. were thoroughly beaten at Rossbach because the Prussians were better prepared, instructed, and commanded. At Jena and Auerstadt the French army, better organized and commanded than the Prussians inflicted an unparalleled disaster on the latter. In 1870 the contrary happened; then the great difference between the armies in organization lay the other way. And 'organization' and 'command' and the predominant part they play in war is the *leitmotiv* of his 'Froshwiler' and of all his military works.

General Zarlinden, another distinguished French author writes:—"It was the Berlin Staff College which beat us in 1870, it was the same instrument, imported into Tokio, which was the real cause of the Japanese success, and it is our own Staff College which will assure the salvation of our country."

Not only in France but in Germany and amongst all the military nations of the present day 'intellectuality' is bracketed with 'numbers' first in order of importance. Endeavours are constantly made to reduce war to a science, the human mind is always seeking for a formula, there is a constant search for a doctrine.

During long periods of peace it will be found that in the military as in the civil life materialism and the intellectual qualities take a higher place than the moral, the former are looked on as the more important things. It is in peace that wealth attracts the literary, and artistic talent reap the rewards. It is then a greater

the banker, the author, the actor, and the actress, who, with certain notable exceptions, receive the peerage, the popular applause, and the honour, the last-named being depicted in the illustrated papers in strange postures and with great display of teeth and leg; and there is no opportunity for the recognition of the moral qualities. This is inevitable—it is difficult to see how it could be otherwise; and at the same time it is all the more necessary for us to bear in mind that there is one other and still more important attribute for an army in order to conquer, and for a nation in order to survive, and that is the ‘moral qualities’—once more embodied in a saying of Napoleon, “The moral is to the physical as three to one.”

However much we may disagree with some of Tolstoi's views we cannot deny that he was a man gifted with the powers of looking very deeply into the heart of things. In his ‘Physiology of War’ he says, “The science of war judges of the strength of an army by its numbers. Napoleon has said ‘the God of Battles is always on the side of the greatest number of battalions.....’ Military science having discovered from innumerable historical examples that masses of troops do not necessarily correspond with the strength of armies, and that small bodies have frequently defeated greater, admits the existence of an unknown factor which it seeks to explain sometimes by geometrical combinations, sometimes by differences in armaments, but above all by what seems the simplest solution, *viz.*, by the difference in genius of the opposing commanders. But it is in vain that one attributes this faculty to the factor in question, the results are not in accordance with facts. One must renounce this idea, which is so cherished by the hero worshippers, that the unknown quantity, the mathematical ‘ $x$ ’, lies in the dispositions taken by the generals, whether they have been well conceived and well executed. The ‘ $x$ ’ is the spirit of the troops. The men who are more anxious to save their own lives are superior to those who think to escape safe and sound. The spirit of the army is the factor which multiplied by the mass gives the victory.”

And old Souvaroff said, “Give me men ready to break their necks and I will give you good tactics.”

But without going so far as Tolstoi in the low place he assigns to the skill and power of manœuvre of the leader, there is a general tendency in peace time to rank this too high. What after all is it which we really admire and which, if we think of it, was the real cause, say, of the French victory at Austerlitz and of the Confederates in the Valley Campaign? In the former was it the idea of deceiving the enemy and luring him in one direction while falling on him suddenly from another direction with the mass of the troops? Lots of people might really have thought of doing that. No it was, in the first place, the fascination, the personal magnetism which Napoleon exercised over his men, that enabled the plan to be carried to a successful conclusion, which could induce a few of his men to await unmoved and in expectation of almost certain annihilation the onslaught of the mass of the Russian forces, while



the remainder of the French army, imbued with the same feelings, went forward in irresistible offence. Take away this personal magnetism of the leader and this enthusiasm of the soldier and Austerlitz would have been a French defeat.

Again, in the Valley Campaign, where would Jackson have been with his misleading and mystifying of the enemy, without the personal power he exercised over his men and which enabled him to make those wonderful marches which alone rendered it possible for him to act up to his famous maxim.

And how otherwise are we to account for the success of the raw levies of the French Revolution against the trained and disciplined armies of the other Continental States led by men steeped in strategical and tactical lore.

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Marengo ... ..	1758 ...	$\frac{1}{5}$
Zorndorf ... ..	1758 ...	$\frac{1}{4}$ to $\frac{1}{5}$

As to the cost of the upkeep of armaments. They cost much, it is true, but after all, though the sums total seem enormous, they are small compared with the total revenue and income of a nation, and less than the average man, worked out as a percentage, does not prudently invest in life and fire insurances. Moreover, it must not be overlooked that they give employment to thousands who would otherwise be thrown on the already overstocked labour markets of the world. They tend in wages, pay, etc., to distribute the wealth of a nation.

As to its taking men away from the more useful employments *viz.* employments which would bring in more wealth to the country. This may be true, though the nations which have adopted universal service do not seem to suffer very greatly in this respect. On the other hand, it gives employment for a time to hundreds of thousands who might not easily find employment otherwise and opens a career to those who wish to adopt it permanently. It also gives a moral and physical training to the manhood of a nation which is invaluable.

In truth, all these complaints about the injury to trade and commerce, the cost of armaments, and the taking of men away from profitable pursuits, have their origin in one of the most ancient desires, *viz.* the acquisition of gold. The creed of these opponents of war, not of all, but of a very large number, the majority perhaps, is contained in the words of an old Chinese hymn sung from ear to ear, hearing as a boy:

Gold, gold, gold! I've got it at last;  
Gold, gold, gold! It's poverishment!  
Women stricken and desolate,  
And women, they've died of it;  
And there's nothing in the whole wide world  
Like gold, gold, gold!

Money will buy us comforts and luxuries as well as the 'necessaries' of life, clothes and food, matinee hats as large as windmills, and motor-cars; but, as the author of "The Valor of Ignorance" says, "Gold illimitable cannot buy valor, nor self-sacrifice, nor endurance, nor discipline." It is doubtful even whether material progress and mechanical inventions make the world any happier, and they certainly do not make the world. A man is no nearer heaven because he flies in an aeroplane 3,000 feet high in the air—at least, he may be nearer heaven in a way, but not in the way I mean.

And lastly we come to a consideration of the waste of life entailed by war. The thing to consider is, 'Is a life lost necessarily a life wasted?'

Let us take a recent case most fresh in our memories. At the time of the Titanic disaster newspapers and people talked much of the terrible waste of life. There was a terrible and sad *loss* of life I grant you; there was also waste of life, such as in the case of those 53 poor little children who went down without ever having had a chance in this world. But it was by no means *all* a waste of life. Men like Colonel Astor and Mr. Isodore Strauss, women like the wife of the latter, have in their deaths done far more for humanity than they were ever able to do in their lives, notwithstanding all their millions. Men and women standing to lose every good thing in the world which money can procure, who can meet death as calmly and bravely as they and many others on the same occasion did, leave an example, an influence, and a fame behind them far transcending anything which money can buy.

And I am sure that all the music of all the Paderewskis and Kubeliks in the world is not so fine and so far-reaching as was the music of that Titanic band, as it played its own funeral march to the grave.

Those who rail against the wickedness of war and extol the advantages of peace because of the prosperity the latter brings us, are sometimes apt to adopt a high moral tone towards the advocates of war, *i.e.*, of justifiable war; and towards us humble instruments by which war is conducted. And yet are they justified in this, even from a religious point of view? What do Christians consider the highest act of the Master? Did he advocate the amassing of wealth? Did he exhibit mechanical genius? Is he worshipped for his miracles? No, he is worshipped and believed in on account of his sublime self-sacrifice, and who will dare to say, Christian or non-Christian, that his death was a useless waste of life?

No life is a wasted life if it is given up for a great idea or in a noble cause, and there are no nobler causes than those of Patriotism and Duty, for in these cases a man lays down his life for his fellow countrymen.

It is just this nobility of war and the sacrifices it entails which brings out the best of a nation and has forced Ruskin, that

man of peace, to say, "that all great nations learned their truth of word and strength of thought in war; that they were nourished in war and wasted by peace; taught by war and deceived by peace; trained by war and betrayed by peace; in a word that they were born in war and expired in peace."

And now, turning for a moment to the question of arbitration which the peace makers would substitute for war. Is it a practicable substitute? Nature and progress all depend on the system of evolution, not on devolution. You must gradually improve from the smaller to the greater, and not *vice versa*. This being so society must first arrive at a state in which the policeman no longer finds a place. All disputes within the state must be settled by arbitration. A thief must steal by arbitration. That is, having announced his desire for something belonging to another, the question must be settled by a court of arbitration. This is of course absurd. Not more absurd, however, than where two nations are concerned. One covets a piece of land belonging to another—Tripoli, Korea—which it deems necessary for security, for its future development, or on which to dump its surplus population. How can such a case be arbitrated for? The nation which requires extra territory for its expansion and existence, why should it be arbitrated for any more than the poor wretch who steals for bread. No doubt, there are some national disputes, just as there are some civil disputes, which can be arbitrated for. But you can never arbitrate for criminal offences, or for those which are the direct outcome of man's elemental nature—fear, self-preservation, and the struggle for existence which is at the root of all progress, which is the primal law of nature, and which all the peace conferences, international codes, lawyers, and judges in the world, now and for evermore, can never alter.

But Mr. Norman Angell denies that man's nature has not changed. He says it has changed, and to support his statements he brings forward such arguments as that the 'city clerk no longer bruises his mother and serves her up for dinner,' or that 'Lord Roberts and Kitchener do not drive their triumphal cars over the bodies of young girls, in the fashion that the leaders of the old Northmen drove their ox waggons over the bodies of their enemies' womenkind. Such arguments are really too puerile to require answering. Till Mr. Norman Angell can show that envy, hatred, and malice, deceit and fraud, anger and passion, loyalty and love, no longer exist, he cannot prove that human nature has changed. And, if it ever did change to this extent, what a dull crowd we should be!

Human nature remains the same, and whatever difference there is, is in the manner of procedure. Now, instead of running our sword through the man who wrongs us we are him in the law courts and obtain damages, and honour is vindicated by pounds, shillings and pence. A necessary change no doubt, but a questionable improvement in human nature.

Could a nation like the German nation ever have been forged out of peaceful arbitration? Was it not war, and war only, which made it possible to bring about German unity and the tremendous results commercial and other, which have resulted therefrom? So also could the British Empire ever have been formed if the extension of British rule and influence had depended on arbitration? And can any one deny that the results which have been obtained at the cost of war and bloodshed have outweighed a thousand-fold, both morally and materially, the temporary expenditure in life and money?

The truth is, this cry for the peaceful settlement of all disputes is a craven cry. I do not believe that, generally speaking, it is based on a high moral view, but that, however sincere certain individuals may be in their advocacy of it, it is born of selfishness and fear. We, having got all we can out of war, now call for arbitration. Can we expect younger nations, in the full strength of early manhood, and with life before them, to look at it from this point of view? They have nothing to gain from arbitration, and we think that we have everything to lose from war. That is the difference.

Some people, in support of their arguments against war, point to the fact that wars are less frequent than formerly, and attribute this to the growing feeling against war as civilisation progresses. This decrease in the actual number of wars, which at the same time are sufficiently frequent if we only look back the last 50 years or so, can easily be accounted for. Formerly there were many more independent States to wage war. Now the lesser have been absorbed in the greater, largely as a result of war, and there are fewer units to engage each other. On the other hand, the wars when they now come are fought out on a far greater scale than formerly.

History is so full of examples of the inestimable advantages which have been brought to nations and humanity at large by war that it is difficult to know where to begin or end when dealing with this subject. It certainly cannot be dealt with adequately within the short compass of a lecture. So I will confine myself to pointing out that the advantages do not lie only with the victorious but even with the defeated nations. That is, it is not victory only which brings blessings, but war itself, quite apart from victory. Where should we British now be had England never been invaded and conquered, first by the Romans, then by the Normans? In what elegant condition Carlyle has already told us. Have we gained or suffered most by those defeats?

Where was the seed sown from which that most advanced and intellectual German Empire sprang? Was it not sown in defeat and disaster at Jena? Can any one say that France is any the worse to-day for her humiliation in 1870? Did she not arise therefrom regenerated, with renewed youth and vigour? And the spirit in which she paid up her indemnity to Germany was worth more to her a hundred times than the value of the gold itself.

And finally, has Russia gained or suffered most from her Manchurian defeats? I may be wrong, but it seems to me that that

contest has advanced the clock of her political freedom by many hours, while opening out some of her worst spots of corruption to the light. Russia is greater now than she was before the Manchurian war.

Bacon says "Nobody can be healthful without exercise, neither natural body nor politic, and certainly to a kingdom or estate a just and honourable war is the true exercise."

What does the other side of the picture show us? What is the effect on a nation which despises the military virtues and which has had, through a long course of years, no wars to fight for existence or expansion, and has found peace and plenty within its own confines?

Look at China. After long years of peace and prosperity the material and intellectual were magnified at the expense of the moral qualities. War was looked on as barbarous; fit only for barbarians. From this it followed that the profession of arms sank lower and lower in public estimation until no man entered the army who could get employment suited to his station in life elsewhere. And what has been the final result? All that great Chinese art which we in these days admire so much sprang to life during the period when China had to fight or before the effects of her fighting had worn away; and in her long and piping days of peace her art has faded to nothing. And although her people are by nature as intelligent, and more frugal, industrious, and law-abiding than any other people in the world, her Government and administration have become corrupt beyond measure, her religion has become practically non-existent, and she has dropped 300 years behind the rest of the civilised world in her mechanical progress. She has become an object of scorn to the rest of the civilised world; and all the most Christian nations were engaged in looting her capital what time they discussed the blessings of universal peace at the Hague. And it is only now, when she has had recently to suffer the stern realities of war, that her regeneration has commenced.

And when all is said and done, wars exist. 'War is the condition of this world; war and progress have walked hand in hand through all the pages of history to the present day, and there is no reason to suppose that they will suddenly cease their close relationship until the time arrives when "the wolf shall dwell with the lamb, and the leopard shall lie down with the kid;" and that day is a mighty long way off yet.

"War is a divine institution," said Moltke, "in it all the finest virtues flourish. Without war the world would lose itself in materialism." Without war there would be no history, for there would be no progress. It has received the sanction of the Bible and the praise of war is read and sung in our churches every Sunday. "Blessed be the Lord, who teaches my hands to war and my fingers to fight." I challenge anyone, who studies history conscientiously, to deny the fact that war has carried far more ultimate benefits in its train than evils. And on the other hand we can find in history no great nation, no great art, and no great virtue which has been born of peace.

"We talk," says Ruskin, "of peace and learning, of peace and plenty, of peace and civilisation ; but I found that those were not the words which the Muse of History coupled together, that on her lips the words were—peace and sensuality, peace and selfishness, peace—and death."

At the conclusion of the lecture, there being no discussion, the CHAIRMAN remarked :—

I think I cannot do better than close the lecture by reading to you the words of a great general of the nation to whom the lecturer has just referred. These are the words :—"The words of Sun, the Master :—To all nations war is a great matter. Upon the army death or life depend : it is the means of the existence or destruction of the State." I will ask you, ladies and gentlemen, to second me in proposing a vote of thanks to Colonel Barrow for the most interesting lecture he has delivered to-day. (Carried with acclamation.)





## THE MODERN INDIAN OFFICER.

BY CAPTAIN C. H. VILLIERS-STUART, 56TH RIFLES, F. F.

The remark is frequently heard nowadays that the Indian officer of to-day is not as good a man as his predecessor of some 15 to 30 years ago; and the usual reason quoted as accounting for this state of affairs is that the increased number of British officers in regiments detracts from the influence of the Indian officer, and deprives him of a part of his responsibility.

It is proposed to investigate the *raison-d'être* of the Indian officer; to compare his past with his present training and duties; to see if the statement enunciated above is correct or not; and if grounds can be shown for believing it, to see how such deterioration can be prevented.

The Indian officers' duties may for convenience of examination be divided into two parts:—

- (i) His work in instructing his men.
- (ii) His administrative duties.

As regards instructing his men: It is difficult to generalise about the past; because for various reasons such as climate, stations, and others which it is beside the point to discuss now, units have varied considerably. But perhaps this much will be admitted. Training was not entirely with a view to war. A smart turn-out, steady close-order drill, and bull's-eye shooting on the range formed an ideal which was fairly general, and could be worked up to by a parade of limited duration in the morning. There was not much variety, and demands on intelligence were small.

It may be said that this picture does not give enough credit for the training of the time. Doubtless some regiments were years ahead of others, but in writing the foregoing paragraph, I am quoting the remarks of pensioned soldiers of the Punjab, and that is how the picture is viewed by them.

If then this representation is anything like the truth, it would seem that the capabilities of an Indian officer as an instructor had no need to be of a very high order. All his teaching was by rule of thumb, and his men drilled as well as a well trained troop of remounts will drill, and for the same reason. The horse is not possessed of a large brain, and learns what is required of him by continual repetition. The men learned in the same way. There was a precise order for every evolution demanded in manœuvring a battalion or company, and everything was cut and dried.

In speaking thus of the old Indian officer, I do not wish to slight men who served our Queen so well; but it is a fact that any man, unless of very exceptional strength of character, is perforce moulded or at all events influenced in his opinions and ideas by the

surroundings of his youth. Take for example any man's views on religion, politics, or anything else. A man is largely the product of his upbringing, and it is not surprising that Indian officers could be found by the score who could teach their men the work required of them. Considering that six months' careful training by an adjutant will make a sepoy a very useful instructor of recruits, not only in close order work and shooting, but in skirmishing as well, there is every reason why Indian officers should have been excellent at the limited work demanded of them in teaching.

To turn now to the Indian officer of to-day, and the instruction he must impart. First, to dissect the man. Is he a chip of the old block, or is he not. Some declare that he is deteriorating. Personally I do not believe it, for the following reasons:—Farming never yet made a man soft; and farming in this country under a severe sun is very hard work and calls for considerable endurance. We get our soldiers from the *zemindar* class throughout India, I believe; and as long as a man leads a hard healthy life, he should not deteriorate physically. The man's inclination may not be for soldiering so much as formerly; but many reasons which are irrelevant here may be advanced to account for this. It may be said that among our Indian officers is a percentage of direct commissioned men, who are not as good as their fathers. In reply, I would urge that some of the direct commissioned Indian officers prove the very best; and if a man is a failure, he can always be got rid of before his probationary term expires. The direct commission argument cannot therefore be said to effect the question very much.

Admitting then that the raw material is physically as good as 30 years ago, and assuming that a man who is competing for the position of an officer has his heart in his work, it appears that the fledgling of to-day is no worse than his father on the whole; and on the other hand some allowance should be made for increased intelligence due to advance in education.

What now is expected from him as an instructor of his men? Since the time of Lord Roberts as Commander-in-Chief, and under successive chiefs, the Indian Army has gradually improved, owing to measures initiated by them, to the progress of thought diffused throughout the British Army generally, and to the lessons of such wars as the Afghan war of '79-80; the Tirah campaign of '97; and the South African war. The motto we work under now is "Preparation for War" and, the Indian Army has to try and keep level with the British Army in all the refinements of training that are now taught in our training manuals.

It is unnecessary to elaborate all that must be taught to N.-C.O's and men nowadays; but one or two examples of what is meant by refinements are given:—

i) Observation practices: to get value out of these considerable thought and trouble is required.

(ii) Fire direction and control, involving as it does, if fully exploited, the use of aiming points, a rough idea of trajectory tables

as a guide to opening and stopping fire, and the effect of ground in relation to fire. It is little exaggeration to say that an ideal fire unit commander approximates to the position of a battery commander. Consider all the points he must quickly think about. He must first select what he regards as the right target; get the range by mekometer, judging distance, from the map, and from the guns; he must decide if he will use one elevation or combined sights; select his aiming point; watch for the right occasions to open fire; observe the strike; and control and correct the fire. He must be wide awake to do all this well. But the ideal company commander with a well trained company should under peace conditions get his men on to a fire position and get a good pattern on to any area within range in reasonable time. It is not a libel on the Indian Army to say that the average Indian officer is incapable of doing this really satisfactorily. But it is all set forth in the books and it is our business to teach it. The fact is the books have gone a little ahead of us at present and we want a year or two to work up to them.

It may be said by the conservatives that what have been called the refinements of training are impractical; as, for instance, that no man under war conditions would bother his head about trajectory tables. Probably not; but it is not difficult to remember that at say 1,400 yards it is quite safe theoretically to fire on perfectly level ground at a target, over the heads of advancing men who are 200 yards from the firer, and till those men are 100 yards only from the target. Quite an inconsiderable rise of ground for the fire position will therefore make covering fire practicable for the greater part of the advance; and that is what is meant by a rough idea of the trajectory tables. A company does not give full value in action unless it can apply its fire in the best possible way; and an efficient company under a skilful commander will simply smother an inferior one.

The test of this can easily be carried out by trial against targets. It cannot therefore be said that these refinements are "jims."

(iii) The fire fight for superiority at close range. What Indian officer can realise the fury of a short range fire fight? Such a fight for instance as went on on Wagon Hill and many another in South Africa; at Nan Shan; at 203 Metre Hill, and around Mukden. British officers who have not been so fortunate as to have had experience in the South African war can, as a result of reading, at least imagine something of what it may be; something of the "void of the battlefield," of which it is written that a man is never so lonely as when lying 5 or 6 yards from his neighbour on a bullet swept zone; of the impossibility of directing one's men. But how is the Indian officer to read of it? Where are his books? How can he picture to himself the scene? and if he cannot do so, his conception of the part he and his men will play will be faulty; all may go well at dress rehearsals with blank, when he does direct his men, who are not feeling

"lonely"; but on the first night, if all these conditions are real, apparent, and unexpected, the play may hang fire.

(iv) Then there are all the "side shows," signalling, telephones, machine guns, mekometers, first aid, and so on. According to the published reports all these things have improved greatly. But they must be made; they don't grow like gooseberries. Signalling, for instance, can be and very often is taught by Indian officers to a large extent; but ask any signalling officer about station discipline if no British officer has been working with the men for some time! And all the other points demand constant and somewhat specialised work.

From the above examples, it would seem that as regards teaching, the Indian officer cannot do what is required nowadays so well as formerly. He can and does do a great deal and it would be ridiculous to imagine oneself above asking his opinion on many things—about fighting on the frontier, use of ground, judging distance, and so on. But he is not up to the more scientific teaching. It is not that the man is inferior to his predecessor, but that the demand is higher. An Englishman who has not seen war, in order to try and gain a true picture of it, reads and thinks; the ideal is to read moderately and think much. This the Indian officer cannot do because no literature exists for him.

It appears therefore that so far as the instruction of his men is concerned, the Indian officer of to-day is not actually worse than his predecessor, though relatively he is not so useful. As a result of this it is possible that the sepoy may be inclined to think less of his Indian officer than he used, and think more of his British officer in comparison. There is indeed a danger of the Indian officer falling in the sepoys' estimation if the now more numerous British officers take the instruction out of the others' hands. The Indian officer will in consequence very soon become nothing more than an ornament. If this is done, as it sometimes is to a certain extent, it is done from excessive keenness, and with the best intention; but it is none the less a fatal mistake. To quote an instance:—An officer was recently told to let the recruits of his regiment march off after a general had seen them. The officer, with a battalion drill voice, marched off the whole crowd. It is a very small incident; but I think it shows which way the wind blows and is wrong in principle. Surely it would have been better to let the drill havildar march them off, or better still, each drill instructor march away his own squad. If on the other hand the British work through the Indian officers the latter keep their status and there seems to be no cause for loss of position or influence.

To turn now to the Indian officer's administrative duties. These are in no way altered by time, and consist now as formerly of producing recruits for his company; keeping his company contented; enforcing discipline; and looking after the health and welfare of his men generally.

On the Indian officer depends largely the recruiting of his company; in some classes perhaps more so than in others. But owing to the different causes that now operate against recruiting, the Indian officer is, as regards recruiting, almost more valuable to his regiment than formerly, if he can bring a good class of recruit.

Then as regards discipline: a company under a good skipper is contented and cheery; wherever is a weak subadar there are quarrels, intrigue, and discontent, and as a consequence, inferior work. The Indian officer is much in the position of the colour-sergeant in a British regiment and is king of his company as regards maintenance of discipline in the lines, and it is the result of his influence if a good tone prevails throughout. To see that equipment and men's kits are kept in good order is merely a question of contracting good business habits of method and system.

Such seem to be the qualities required to carry out the duties under discussion. And the reason there is no alteration in what is required is that they depend on the unchanging factor—human nature. For it is character that is wanted—character of which “old Gorgon Graham” is a type, or Cheyne senior in Kipling’s “Captains Courageous,” who, when relating his life’s story to his son, makes the remark “of course I could always handle men.” These are master men; ideals. But whether a man succeeds in making himself a multi-millionaire, whether he becomes a man in authority in mill or mine, or is merely a centurion in a regiment, he has to handle men. For the centurion, who is low in the scale, the task is comparatively easy, for he is greatly assisted by standing orders, *dastur*, and discipline; nor is he troubled by such terrors as syndicalism. But on the other hand, in proportion as he is aided, so is he deprived of the necessity of contending with difficulties; and in addition he does not feel the rowelling spur of competition. The growth of character therefore is retarded, for it is one of nature’s rules that continual effort breeds strength. The point I wish to make however is that for the duties we are considering character is the important quality; and this is true of all times, past, present, and future.

If the conclusion arrived at earlier, *viz.*, that the embryo Indian officer of to-day is as good a man as his predecessor, is admitted; and if the finished article is inferior, it follows that the reason must be found in the process of making the latter. The question that next presents itself therefore is, what were the old methods and how do they differ from the present? The remark as to the inapplicability of generalisations made on page 375 applies with equal force now; but as far as can be ascertained the wing commander in days gone by looked after his wing, its interior economy, etc., in precisely the same way as the double company commander looks after his command now. The wing commander had twice the number of kits to inspect, of kindred rolls to enter up, of reports to hear, and so on, and therefore must have spent about twice as much time over these duties as the

double company commander does nowadays. Beyond this the only difference I can suggest is that the wing commander was usually an officer of considerable service and experience, whereas comparatively junior officers often find themselves acting as double company commanders now. This is not a matter for complaint; and it is moreover correcting itself all too fast; but so long as it is so, the junior British officer is not likely to overshadow the Indian officer any more than the older man.

There seem to be no grounds therefore for saying that as regards his administrative duties the Indian officer is cramped by the British officers more than in the old days.

The stock argument quoted as being the making of good Indian officers is the advantage that the Punjab Frontier Force and Baluchistan regiments had at one time in outpost service. It was in the outpost that officers and N.-C. O.s acquired character and self-reliance, and learned how to *bandobast* for themselves and their men. There is no gainsaying the fact that the loss of the outpost work is much to be regretted, always provided it is taken in moderate doses, with a judicious proportion of time in cantonments sandwiched in.

Trained under the conditions that obtain beyond the administrative border of India, where for slackness on escort or convoy duty the penalty is paid, (if not to-day assuredly to-morrow) by becoming a target for a prowling tribesman, the officers must necessarily become capable. However, for reasons which do not concern us, the outpost is now done by Militia; and the value of the training is again proved, if proof were needed, for among the officers of the Militia there are men as good at their own business as the best of the regulars.

But it was only a small part of the Indian Army that had the benefit of such outpost training. The Indian cavalry for instance is a splendid service, with Indian officers second to none, yet few of these regiments were employed much in outpost work. This work therefore, though it improved a fraction of the army, does not account for the administrative ability of the Indian officer throughout the country. He has apparently just as free a hand as ever and is treated in no way differently to his predecessor. If there are more British officers about, they lighten the burden of their own administrative work, which is got through quicker, leaving more time available for instruction.

It is thought then that a fair case has been made out to show that if the present man is not the equal of his father in administrative work it is not the fault of the system, which has not changed. On the other hand it has been shown that as an instructor, the Indian officer lacks the necessary knowledge of war which we can gain second hand, and has not the imagination required to make an expert; and that, therefore, when weighed in the balance as compared with the father, against the British officer, he may not come up to the corresponding standard.

The question now is, does this fact detract from the Indian officer's influence, or make him a worse officer? If not, what other reason can be suggested to account for deterioration.

It may be argued by some that the greater number of British officers, who are more in evidence and do more teaching, put the Indian officer in the shade, and as said previously, the men may be inclined to think less of him. Others will reply that the smaller the number of British officers in a corps, the more radiant light will they diffuse, and that a similar effect may follow. It a question hardly susceptible of proof and rather a matter of opinion; but whether the Indian officer loses or not depends really on whether his superiors keep to the right principles of the system of working; that is to say, his worth depends on the way his British officers have made him. For there are ways and ways of doing things. Some have the gift of drawing a man out more than others. Certain things we know must be avoided; one may often do more harm than good in not keeping one's mouth shut. The Commandant of the Staff College, Camberly, says in his final address to the Senior Division (published in the Army Review of April 1912) that "initiative is a very sensitive thing and easily checked"; and this is so true that it is worthy of full digestion. On the other hand the "Let him run the whole show" principle can be carried to excess, when dealing with a man not matured to his work. It sounds very well, and gives the idea that the man is made to shoulder responsibility, but the subject must be watched, or bad habits and mistaken ideas will be contracted.

It is no doubt hard to strike the happy mean between one's desire to get a man to take hold and command his men, giving him a free hand the while, and one's endeavours to teach and avoid mistakes. But the foregoing remarks are rather in the nature of "don'ts." How is the young Indian officer to be made? War is a good school; but we cannot have war. Outpost work is good; but that is barred. The best answer to the question is to be found in Infantry Training, Part V, paragraph 170 (2): "In order to develop and encourage initiative, a commander must leave to his subordinates in peace training the solution of the problems which they will have to decide in war." It is well known to any one who has watched a young officer growing up, that the more problems of sorts he can be given, the better; not only tactical problems, but such odd jobs as hunting for grazing grounds for camels, buying bhoosa, building a hut or making a football ground; any odd job in which it is not a case of giving an N.-C.O. who happens to live near his home an order, and finding it done automatically. When he can do this, he can be sent out to site fire trenches, and have them made, and so on. He must be worked regularly and fairly hard and given work to do, for the execution of which there are no standing orders,—problems which require thinking out and are incapable of solution by formulæ. How did Moore teach his company officers at Shorncliffe? There were neither war nor outpost conditions there. Colonel



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There seem to be no grounds therefore for saying that as regards his administrative duties the Indian officer is cramped by the British officers more than in the old days.

The stock argument quoted as being the making of good Indian officers is the advantage that the Punjab Frontier Force and Baluchistan regiments had at one time in outpost service. It was in the outpost that officers and N.-C. O.s acquired character and self-reliance, and learned how to *bandobast* for themselves and their men. There is no gainsaying the fact that the loss of the outpost work is much to be regretted, always provided it is taken in moderate doses, with a judicious proportion of time in cantonments sandwiched in.

Trained under the conditions that obtain beyond the administrative border of India, where for slackness on escort or convoy duty the penalty is paid (if not to-day assuredly to-morrow) by becoming a target for a prowling tribesman, the officers must necessarily become capable. However, for reasons which do not concern us, the outpost is now done by Militia; and the value of the training is again proved, if proof were needed, for among the officers of the Militia there are men as good at their own business as the best of the regulars.

But it was only a small part of the Indian Army that had the benefit of such outpost training. The Indian cavalry for instance is a splendid service, with Indian officers second to none, yet few of these regiments were employed much in outpost work. This work therefore, though it improved a fraction of the army, does not account for the administrative ability of the Indian officer throughout the country. He has apparently just as free a hand as ever and is treated in no way differently to his predecessor. If there are more British officers about, they lighten the burden of their own administrative work, which is got through quicker, leaving more time available for instruction.

It is thought then that a fair case has been made out to show that if the present man is not the equal of his father in administrative work it is not the fault of the system, which has not changed. On the other hand it has been shown that as an instructor, the Indian officer lacks the necessary knowledge of war which we can gain second hand, and has not the imagination required to make an expert; and that, therefore, when weighed in the balance as compared with the father, against the British officer, he may not come up to the corresponding standard.

The question now is, does this fact detract from the Indian officer's influence, or make him a worse officer? If not, what other reason can be suggested to account for deterioration.

It may be argued by some that the greater number of British officers, who are more in evidence and do more teaching, put the Indian officer in the shade, and as said previously, the men may be inclined to think less of him. Others will reply that the smaller the number of British officers in a corps, the more radiant light will they diffuse, and that a similar effect may follow. It a question hardly susceptible of proof and rather a matter of opinion; but whether the Indian officer loses or not depends really on whether his superiors keep to the right principles of the system of working; that is to say, his worth depends on the way his British officers have made him. For there are ways and ways of doing things. Some have the gift of drawing a man out more than others. Certain things we know must be avoided; one may often do more harm than good in not keeping one's mouth shut. The Commandant of the Staff College, Camberly, says in his final address to the Senior Division (published in the *Army Review* of April 1912) that "initiative is a very sensitive thing and easily checked"; and this is so true that it is worthy of full digestion. On the other hand the "Let him run the whole show" principle can be carried to excess, when dealing with a man not matured to his work. It sounds very well, and gives the idea that the man is made to shoulder responsibility, but the subject must be watched, or bad habits and mistaken ideas will be contracted.

It is no doubt hard to strike the happy mean between one's desire to get a man to take hold and command his men, giving him a free hand the while, and one's endeavours to teach and avoid mistakes. But the foregoing remarks are rather in the nature of "don'ts." How is the young Indian officer to be made? War is a good school; but we cannot have war. Outpost work is good; but that is barred. The best answer to the question is to be found in *Infantry Training*, Part V, paragraph 170 (2): "In order to develop and encourage initiative, a commander must leave to his subordinates in peace training the solution of the problems which they will have to decide in war." It is well known to any one who has watched a young officer growing up, that the more problems of sorts he can be given, the better; not only tactical problems, but such odd jobs as hunting for grazing grounds for camels, buying bhoosa, building a hut or making a football ground; any odd job in which it is not a case of giving an N.C.O. who happens to live near his home an order, and finding it done automatically. When he can do this, he can be sent out to site fire trenches, and have them made, and so on. He must be worked regularly and fairly hard and given work to do, for the execution of which there are no standing orders,—problems which require thinking out and are incapable of solution by formulæ. How did Moore teach his company officers at Shorncliffe? There were neither war nor outpost conditions there. Colonel

Henderson tells us in his "Science of War," p. 346 *et seq.*, in one of his most interesting lectures.

As far as one can make out, a great deal of teaching is done nowadays by giving problems of various sorts; but it takes time and thought to be continually inventing new problems, or disguising old ones in a new wrapper. The time however must be found. The danger to be guarded against is that an unfair share of time and attention is spent on that ever-pressing administrative work, for which there is an immediate audit. There is far more fuss made for instance over the loss of five rounds than if a sepoy's brain becomes semi-comatose. Kit must of course be looked after; men must be clothed, fed, and paid. It is necessary to attend to these things, for without economy and care, funds would soon give out. And in this respect the Indian officer is the same as anyone else in following cause and effect. He sees that there is trouble over the loss of the five rounds; but if he can be got to see that it is just as important to stimulate the sepoy's brain as to preserve his rounds, he will do it; though of course it is much harder. The fact is that all administrative work is accepted as inevitable; and rightly so. But the teaching, brain teaching, is "making work," and outwardly there is sometimes little to show for it. If it is not done, nothing happens. The real audit for this work is not till the regiment goes on service. So that if the Indian officer is encouraged in this direction, and worked and made by his superiors to feel that he is answerable for the progress of his men, I do not think that he will lose influence or fail to take responsibility.

So much for the means of making the Indian officer fit for his place, and it must always be remembered that lack of imagination hampers him in peace and that many a man put into a real situation of difficulty will do far better than in an assumed situation, because he can appreciate it more fully. Moreover to his credit it must not be forgotten that we cannot do without him; he is an absolute necessity to us. All who have had any experience of working with native troops will I think agree that the best value is only to be got out of the men by working through the Indian officer. The severer the test, *i.e.*, the more adverse the circumstances, the more fully is this borne out. In many cases the squadron or company commander is very much the shepherd of his flock; in a class company enlisted from a limited area the family history of each man is common knowledge throughout the company; and all know that the story of any brave deed will quickly be known in every home. Here is a note for an officer to strike when his men are exhausted and want encouragement. And if a company is enlisted from a wider area the Indian officer is usually of the same class as his men and must know a good deal about them, and he is the man who will keep his company going, not through a 'week end war' only but throughout a long campaign. In long periods of peace training this power of the Indian officer may not make itself strikingly apparent and is therefore apt to be overlooked when considering a man's worth-

An attempt has been made to analyse the modern Indian officer, to consider his duties and training, and his value compared with that of his father. On a review of the whole question it appears that the extra British officers are wanted to produce efficiency but that they should in no way trespass on the Indian officer's sphere of work. If the tendency does exist in any way to curtail the Indian officer's responsibilities, or lessen his influence, it is not universal, and can and should be avoided. It is thought therefore that the Indian officers of the present generation may confidently be expected to prove themselves the equals of their predecessors when the day of battle comes, and that there is no fear of them being found wanting, if only they are trained in the right way.



## WEATHER IN WAR.

A STUDY OF THE INFLUENCE OF CLIMATE ON MILITARY LIFE.

By Major R. J. Blackham, R.A.M.C.,

on 16th July 1912.

Surgeon-General A. T. Sloggett, O.M.G., C.B., in the Chair.

Weather, climate and seasons are phenomena which directly affect military operations perhaps more than any other of the ramifications of military geography.

In his well-known introduction to that science, General E. S. May gives it as his opinion that "Climates so intimately concern the military commander that they should be carefully studied and known." For instance, the influence of rain or thaw is obvious, as when the soil is a foot deep in mud, assaults can scarcely be impetuous, artillery and cavalry move with difficulty, and combats are less decisive in their issues, as rapidity of pursuit is impossible.

The seasons of the year affect tactics also. The greater part of the work can only be accomplished in the day time. To win decisive battles prolonged hours of light are necessary. A few hours added to a day will make the difference between a mere defeat and an annihilating rout. Since the sun stood still for Joshua, many a triumphant commander has prayed for a lengthened evening. On the other hand, night has come to the rescue of not a few clinging desperately to safety. "Night or Blucher" is as apocryphal as many traditions, but our enemies in South Africa did often fight for the night. In winter, marches are more irksome, not only on account of snow, mud, and ice, but because cold affects the vigour of men and saps their energies. The start in the early morning is more difficult, and the day is curtailed at the other end. Warm food is more indispensable; cold produces hunger and makes other heavy calls on the transport and supply columns and on the health of the men.

Other phenomena connected with weather will affect the progress of battles. The haze that in the early morning often hangs over river valleys during autumn may greatly modify operations. We remember the meadows watered by the Meuse shrouded in grey mist on September 1st, 1870, the morning of Sedan. The soldiers struggling blindly in the November fog at Inkerman are not yet forgotten. Mist and rain—and stupidity—nearly lost us Albucera. Such are some experiences. We might add further illustrations from the German operations during the Le Mans campaign, when frequently a thick morning mist lying over the snow-clad fields disastrously shortened the working hours of war. Baron von der Goltz tells us how difficult it is, under such circumstances, to drive an

...ious to him. The  
 ...line was impeded  
 ...fighting, just as the  
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 ...the great heat protracted during a  
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 ...in the story of the Walcheren Expedition, and  
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 ...and especially so during the siege of Belfort. Such  
 ...considerations lead us to reflect how much sanitation and questions of  
 ...health must be studied in relation to geographical conditions. The  
 ...campaign of 1870 when the great issue was decided in summer, and  
 ...in an extraordinarily rich and highly populated country, cost the  
 ...Germans 400,000 sick. The average duration of a sick man's absence  
 ...from his regiment may be taken as twenty days. The extent to  
 ...which the fighting efficiency of an army suffers by its tally of men  
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 ...war in the East or in tropical climates demands quite different pre-  
 ...parations to those for a campaign in Europe."

Climate, as we use the term, is the resultant of the average  
 atmospheric conditions, or, more simply, it is the average condition  
 of the atmosphere.

Weather is a single occurrence, or event in the series of condi-  
 tions which make up a climate.

The climate of a place is in a sense its average weather. The  
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Climatology, or the study of climates is largely a descriptive  
 science and aims at giving us clear a picture as possible of the  
 interaction of the various atmospheric phenomena at any place or

It rests on physics and geography, the latter factor. Its main object is to be of practical use. Its methods of treatment lay most stress on the most important to life.

And industry, climate and health are the soldier's.

As out in the quotation I have selected as affects the soldier so closely in his daily life

The variety of climates to be found in different parts of the world that it has long been customary to classify the world into certain broad belts, called the climatic zones. These I will now remind you are the so-called torrid, the two temperate, and the two frigid zones.

The torrid, better styled the tropical zone, is limited on the north and south by the two tropics of Cancer and Capricorn, the equator dividing the zone into two equal parts.

The temperate zones are limited towards the equator by the tropics and towards the poles by the Arctic and Antarctic circles.

The two polar zones are caps covering the polar regions and bounded on the sides towards the equator by the Arctic and Antarctic circles.

These zones divide up the hemispheres very unevenly, as they constitute the following percentage of the earth's surface:—

Tropical Zone	...	...	...	40 per cent.
Temperate Zone	...	...	...	52 "
Polar	...	...	...	8 "

This broad division of the earth's surface into zones is necessary as a first step in the study of climate, but it is not satisfactory when a more detailed discussion is undertaken.

The physical characters of the earth's surface make further subdivision desirable, and under the control of these different physical conditions the climatic elements unite to produce certain distinct types called—

1. Continental, with its varieties.
  - (a) Desert, an extreme variety.
  - (b) Littoral, a type modified by the proximity of the sea.
  - (c) Monsoon, a class modified by certain trade winds.
2. Marine or Oceanic Climates.
3. Mountain Climates.

**1. Continental Climates:—**These are, as a rule, severe. The annual range of temperature increases with the distance from the sea and the regular daily ranges are large, reaching 40 degrees and even more.

In winter clear crisp days, which are followed by cold calm nights, are interrupted from time to time by spells of cloudy, windy weather; in summer, clear calm nights, followed by hot days with increasing wind velocity and heavy clouds towards noon and often by thunderstorms late in the afternoon; these are the typical weather



obstinate enemy out of a country which is advantageous to him. The engagements began late, the advance of the firing line was impeded by snow, the early evening put an end to fighting, just as the disintegration of the enemy's lines showed success to be within reach. The length of the winter's night, too, made it possible for him to rally again, to occupy fresh positions, to receive reinforcements, and gather himself together for renewed resistance on the morrow. The process of destruction which was being wrought in the French army was so frequently interrupted, that it lost its force. The Germans, had it been summer, would have completed in three or four days what, in winter, cost them seven to accomplish. Delay, too, reduced results by half, for in war rapidity multiplies success. The same author points out that, among the causes which led to the loss of the Battle of Kunersdorf, the great heat protracted during a long summer day must be reckoned. But if the season did not favour Frederick at Kunersdorf, it was kind to Zieten at Torgau, for it was the coming darkness which enabled that leader to take and hold the heights of Stiptitz. The duration of daylight is certainly a factor to be reckoned with when a battle can be pre-arranged.

It is scarcely necessary to point out how much the health of troops is affected by unfavourable or trying weather, disastrously so when want of supplies is added to its inclemency. Our own annals bring this home to us in the story of the Walcheran Expedition, and more recently of the Crimea. "But it was felt even by the successful Germans in 1870, and especially so during the siege of Belfort. Such considerations, lead us to reflect how much sanitation and questions of health must be studied in relation to geographical conditions. The campaign of 1870 when the great issues was decided in summer, and in an extraordinarily rich and highly populated country, cost the Germans 400,000 sick. The average duration of a sick man's absence from his regiment may be taken as twenty days. The extent to which the fighting efficiency of an army suffers by its tally of men in hospital can easily be calculated. The climate and degree of civilization of the land in which war is waged will modify and influence the sanitary measures that we must take. Obviously, a war in the East or in tropical climates demands quite different preparations to those for a campaign in Europe."

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the earth's surface. It rests on physics and geography, the latter being a very prominent factor. Its main object is to be of practical service to man, and therefore its methods of treatment lay most stress on the elements which are most important to life.

Climate and crops, climate and industry, climate and health are subjects of vital interest to the soldier.

As General May points out in the quotation I have selected as a text, no other science affects the soldier so closely in his daily life in peace and war.

So great is the variety of climates to be found in different parts of the world that it has long been customary to classify them into certain broad belts, called the climatic zones. These I need scarcely remind you are the so-called torrid, the two temperate, and the two frigid zones.

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conditions of the continental interiors in the higher latitudes, and they are of special interest to us in India.

(a) *Desert Climate*.—It is a curious fact that desert and marine climates, the two extremes of the climatic scale, resemble each other to some extent.

Desert air, though often dusty by day is, like ocean air, remarkably free from micro-organisms.

Again, deserts, like oceans, have high wind velocities, but the winds are most likely to be prevalent by day, whilst the nights are generally calm and relatively cool.

Curious conditions of drainage result from deficient rainfall, and rivers "wither away" or end in brackish lakes. Desert plants protect themselves against the attacks of animals by thorns and against evaporation by means of hard surfaces and an absence of leaves. Likewise the life of a man is strikingly controlled by the climatic peculiarities of strong sunshine, heat, and dust.

(b) *Coast and Littoral Climates*.—Between the pure marine and pure continental types the coasts furnish every possible gradation. Prevailing winds here act as important controlling influences. When these blow from the ocean as on the western coasts of the temperate zones the climates are more marine in character, but when they are off shore as on the eastern coasts of the same zone, a modified type of continental climate prevails even up to the sea coasts.

(c) *Monsoon Climate*.—Exceptions to the general rule that east coasts have rainier climates in trade winds latitudes are found in India where the western coast is abundantly watered by the wet south-west monsoon.

In India there are really three seasons—one cold during the winter monsoon, one hot in the transition season, and one wet during the summer monsoon.

Comparatively little rain occurs in winter except in the northern provinces, and the trying climate of the damp transitional period which occurs in the autumn is familiar to most of us.

2. *Marine or Ocean Climates*.—These are equable, damp, and cloudy. Ocean air is, as is well known, clearer and purer than land air, and is in more active motion because the friction of air on water is less than the friction of air on land.

3. *Mountain Climates*.—The climate of mountains is characterised by abundant sunshine and clear, pure dry air.

It is often said that the climate of such places as Cherat is warmer than that of plain stations like Peshawar in the winter months. It is a well-known scientific fact that this is the case, as the air flows down the mountain sides and collects in the valleys below. This phenomenon plays an important part in the modern utilisation of mountains as health resorts.

In the rare dry air of mountains evaporation is rapid, the skin dries and cracks, and thirst is increased—a condition with which all Anglo-Indians are familiar.

Having briefly glanced at the general features of climates as they affect soldiers as well as individuals, we may now proceed to consider the subject in its relation to the military commander, especially in war.

The subject may be considered under three headings :—

1. The influence of climate on the fighting efficiency of races.
2. The influence of climatic surroundings on the hygiene of the soldier.
3. The influence of climatic phenomena in various campaigns, especially in relation to the sanitation of armies.

1. *The influence of climate on fighting efficiency.*— Lord Bacon in his essay on the *Vicissitudes of Things* gives a remarkably able analysis of the influence of climate on the warlike tendencies of peoples.

He says :—“ Wars in ancient times seemed to move from east to west, for the Persians, Assyrians, Arabians, and Tartars were all Eastern people. It is true the Gauls were Western, but we read of only two incursions of theirs, one to Gallo-Graecia (Gallicia in Asia Minor), the other to Rome. But east to west have no certain points to heaven, any no more have the wars from east to west any certainty of observation, but north and south are fixed, and it hath seldom or never been seen that the far southern people have invaded the northern, but contrariwise, whereby it is manifest that the northern tract of the world is in nature the more martial region, be it in respect of the stars of that hemisphere, or of the greater continents that are upon the north, whereas the south part for all that is known is almost all sea (this guess has been corroborated by subsequent discovery) or, (which is most apparent) of the cold of the northern parts, which is that which, without the aid of discipline, doth make the bodies hardiest and the courage warmest.”

In the *Growth of the Empire*, by Arthur W. Jose, Bacon's view is supported by this chronicler of the Empire who places physical strength as the first of the qualities specially useful in the work of colonisation. He says :—“ In the competition for colonies all parts of the earth have been occupied and that nation must be most successful which can best stand all varieties of climate and come through all dangers with least permanent harm. Such a nation will be bred in temperate climates and, on the whole, the farther north the better. Britain, France, and Germany have the advantage over Mediterranean nations.”

Dr. Miller Maguire in his *Military Geography*, however, challenges this view, and says it cannot stand the test of either ancient or modern history.

“ In truth, the temperate zone which is intermediate between the north and the equator has produced all the greatest conquerors from Semiramis to Alexander, from Hannibal to William of Normandy, Gustavus and Napoleon. The majority of the Moors must also have come from the temperate zone, as certainly came all the

Manchurian, Mongol, and Tartar leaders. Even the greatest patriots and liberators of history belonged to the same zone as that which gave birth to Arminius, Matthias, Henry IV, Washington, and Bolivar. It will be found that the temperate zone is the best for military as well as civil virtues, but Lord Bacon's saving clause regarding discipline applies whether to the northern or southern parts of the temperate zone, or to the world at large. A well-disciplined army, with weapons up to the highest resources of the age, and with well-organized systems of transport, will defeat an undisciplined force wherever its base, north or south. The Macedonians were north of the other Grecians, whom they routed as they pleased. The Romans were south of Helvetia and Gaul, yet they defeated the hardy and daring inhabitants of these regions. The Saracens for a period carried all before them, east and west and south and north."

He continues that Lord Bacon makes another mistake in saying that the cold of the northern countries makes the courage warmest, pointing out that no native of Europe is braver than a tropical African. "When he is disciplined and well armed he is capable of the greatest things, and only armed with the spear and shield of savagery he was able to endanger our square at Abu Klea and sack Khartoum.

"Bacon's notion that the most northern people have the hardest bodies and the warmest courage, will, moreover, not stand investigation, as the people of Spain have been at least as brave as the people of Holland, whilst in our own country the men of Cornwall and Kent are no whit inferior in any respect to the dwellers in the Orkneys.

"In the American War the men from Texas, Georgia, Carolina, and Virginia fought far better man for man with inferior weapons and resources than the men from Boston, New York, Chicago, and Pittsburg. But stranger than all, the natives of Southern Europe in Napoleon's army bore the cold of Russia in 1812 better than the Russians themselves, and men from the basins of the Rhine and the Po displayed far more powers of endurance than men from Picardy, Belgium, and Prussia. Again, when exposed to hardships in the Balkan Peninsula in 1877, the Russians from the steppes of Caucasus made a very poor display of staying powers as compared with the Turks from Asia Minor."

Dr. Maguire holds that for many reasons, such, for instance, as the necessity for constant exercise, and hard fare the people of mountain districts ought to defeat the people of the plain, if equally disciplined and well-organized.

Hence he attributes the value set upon Swiss, Scottish, and Swedish mercenaries in European wars from 1560 to 1763.

To the same cause may be traced the high esteem in which the Gurkhas are held amongst the numerous races who march under the banner of St. George.

Plains, however, produce heroes as well as mountains: and the fortitude of the Red Indians of the Mississippi basin and their gallantry in war before they were utterly broken by the United

States is described as far superior to anything conceived by the most severe of the Spartan kings.

On the whole, however, we think it must be admitted that Lord Bacon is right, as in temperate climates physical and mental development is stimulated by conditions neither too easy nor too hard.

Extremes of heat and cold cause lethargy, whilst where man finds the seasons succeeding each other with regularity, he tries to make nature his servant and develops skill in evading the effects of heat and cold.

The men from the cold northern latitudes have energy and keenness in a more marked degree than those from warmer climates.

Compare, for example, the people of Scinde and Bengal with the Afridis and other trans-border Pathans, who spend their lives in what is practically a temperate climate.

2. *The Influence of climatic surroundings on the hygiene of the soldier*:—Turning to this topic we find that from the earliest times medical and lay writers have been strongly prejudiced in favour of a causal connection between atmospheric conditions and disease.

Practical experience has, however, led to very contradictory conclusions; for instance, diseases usually characteristic of one zone are known to spread widely over other zones, and diseases which usually prefer the warmer months sometimes occur in the coldest.

Most of the disagreement comes from the fact that not only may the different weather elements themselves, temperature, moisture, wind, sunshine, and so on, each have some effect in the production of a disease, which it is impossible to determine, but so many other factors are concerned in the matter that confusion and contradiction in the conclusions arrived at are well nigh inevitable. Sanitation, food, water, habits, altitude, character, and moisture of the soil, race, traffic, and other controls serve to complicate the problem still further. In most studies of climate and health, some, or even many, of these factors have not received attention, and hence the results have usually been incomplete. Local, peculiar, and temporary conditions may play a large part in the prevalence of disease. Overcrowding under unhygienic conditions, especially, during cold weather, and traffic by rail, steam, caravan, or on foot are usually more important than climate. The frequent escape of mountain and desert tribes from epidemics is to be attributed in most cases not to their climatic advantages but to the smaller chance of importing disease, because of little intercourse with the outside world, and of spreading it, when imported, because of the scattered population.

Nowadays the cause of disease is no longer sought directly in meteorological conditions, but in the effects, more or less direct, of these conditions upon the micro-organisms which are the specific causes of disease. Atmospheric conditions may help or may retard the development of microbes, and may strengthen or weaken the

individual's power of resistance against the attacks of germs, as well as affect his susceptibility.

Winds were at one time regarded as the chief agents in spreading epidemics: now it is known that diseases cannot be carried far by winds, for the micro-organisms of disease do not long maintain their power in the free air and under the sun. Rain has been supposed directly to control the distribution of disease: now we believe that it only acts indirectly, through drinking water or through its control of the dust in the air. Dust may and does contain the germs of infectious diseases, and aggravates affections of the eyes and lungs, but harmful exhalations are no longer believed to be given off by the soil.

Well within my own recollection we cloaked our ignorance with regard to the cause of malaria by talking learnedly of a miasma rising from the soil, and I have actually been pointed out the malarial mist hanging over an Indian village.

Now we know that the mosquito is the miasma and that drainage and sound sanitation will banish her from our surroundings.

For the purposes of this section we may disregard all minor climatic considerations and deal with our subject under the simple headings of (A)—Campaigns in hot climates, and (B)—Campaigns in cold climates.

Let us consider the former first.

#### (A)—*Campaigns in hot climates.*

The uniformly high temperatures of the tropics, especially when combined with high humidity and the characteristically small diurnal variation of temperature, have certain well established effects on the human organism. Amongst these the following are commonly noted:—

1. Increased respiration.
2. Decreased pulse action.
3. Profuse perspiration.
4. Lessened activity of stomach and intestines, and tendency to digestive disorders.
5. A depression of bodily and mental activity.
6. Enervation.
7. Disinclination to exertion—in fact, a general, ill-defined condition of debility.
8. Increased activity of the liver.
9. Increased action of the kidneys.

Damp hot air contains less oxygen than cool air and the result of breathing it for any length of time produces impoverishment of the blood. As the blood is undoubtedly the life, there is consequently lowered vitality, diminished capacity for work and greater fatigue after any work which is undertaken. All this renders the body less able to resist disease as a fatigued and anæmic individual is much more prone to "catch things" than a vigorous healthy one.

It seems like a contradiction, but it is an undoubted fact, that the danger of catching cold is far greater in the tropics than in temperate climates, and must therefore be carefully guarded against. Lord Wolseley has said of the tropics, "Not to get cold is to avoid almost certainly all the causes of disease," and a recent writer has well said that these words should be inscribed on the walls of all the barracks in the tropics.

Besides the more or less direct effects of exposure to tropical sun and heat, such as sunstroke, heat exhaustion, and the like, the campaigner in hot countries has to think of malaria in its various forms, and dysentery, the two worst enemies of the white man in the tropics: not to mention their less powerful but equally dreaded allies, tropical abscess of the liver, cholera, and plague.

The fact that plague, and to a large extent cholera, are practically limited to the tropics, is the result of modern sanitary precautions in temperate latitudes. It is the unsanitary conditions that prevail amongst tropical peoples which favour the spread of these and similar diseases, and not the climate *per se*. The climate is not the sole, nor even in many cases the determining factor of so-called tropical disease, and almost the most remarkable thing about Oriental conditions of life is that with the sole exception of the effects of the sun the European "stands the climate" better than the natives themselves. When he does not do so more often than not he has himself and not the climate to blame. For example, the young British officer direct from Sandhurst on arriving in India finds himself surrounded by rich food, wine, and short drinks to which he may not have been accustomed at Home. At first, the change, the excitement of novelty, and high temperature act as stimulants to appetite, and the excessive loss of fluid by sweating, increased very often by excessive and unnecessarily severe exercise, create a powerful thirst. Little wonder, therefore, that in such circumstances the youth, having the appetite and opportunity of gratifying it, is apt to indulge himself beyond safe limits. He is made lazy by the heat and concentrates all the exercise of the day into a comparatively few minutes of rackets or polo in the late afternoon. Very likely he sits up late at night, drinking and smoking, so that in the morning he is too sleepy to take exercise at the best time of the day. And so it comes about that too much food and alcohol, and the diminished excretion incident to high temperature throw a very large and unusual amount of extra work on his liver.

Very often the liver rises to the occasion, but it often "jibs," and too often warnings in the shape of headaches, a feeling of weight or fulness, or even of pain in the region of the liver, with a general feeling of being "out of sorts" are disregarded.

Finally the poor overworked liver gets one or more jars in the form of chills such as may arise from a cold bath, a wetting, or from lying uncovered on a warm night in a current of air, with the result that our young friend goes to hospital and is lucky if he escapes having to take a trip to Europe as the result of his folly.



Now the wise old soldier commits few or none of these youthful indiscretions. He wears a cholera-belt, or sleeps, even on the warmest night, in flannel pyjamas, with a thin blanket drawn over his abdomen. During the day he takes good care not to sit down in damp clothes, and he has a great respect for a shower of rain. The result is the fine specimens one sees around us who have spent many long years in this Land of Regrets.

Malaria is one of the greatest obstacles in the way of the military commander in tropical countries. Ross spoke well when he said that the success of Imperialism depends largely on success with the microscope. Our hope in future campaigns lies in determined efforts, not to destroy malaria-bearing mosquitoes, for there is no time for this in a campaign, but to protect individuals from infection by mosquitoes.

In the light of new discoveries, soldiers in the tropics are now in far less danger from malarial infection than they were a few years ago and the likelihood of the recurrence of experiences such as the American army underwent in Cuba is extremely unlikely.

I would remind you that in that memorable campaign just after the capture of Santiago, one half of the American army in Cuba was incapacitated at the same time by reason of malarial fevers. This grave condition of affairs evoked an appeal to the War Department signed by all the officers of higher rank for an immediate removal of the troops to a more healthy locality, using the sentence "This army must be moved or perish."

Dysentery occurs epidemically in all latitudes, but has its home in the warmer climates, increasing in severity and frequency with approach to the equator. Some form of dysentery is almost always present in lower latitudes where this disease is next in importance to malaria in causing high death-rates. High temperatures are clearly necessary for the development of the disease germ, but numerous other controls are also needed. The maximum incidence is usually in the hottest or wettest months, and in India, the latter half of "the rains" is the so-called dysentery season. It has dogged the footsteps of our armies in all ages from Agincourt to South Africa. Lack of sanitary precautions, impure water, overcrowding, and badly cooked food are the predisposing causes. The best preventives are protection of the more susceptible parts of the body against chills, and a well organized sanitary service.

Even in extra-tropical latitudes, bowel complaints show a similar dependence on temperature, for they are most frequent in summer and early autumn. Usually the hotter the summer, the greater the prevalence, and the severity of these complaints and the higher the death-rate from them. Other factors are, however, concerned in the matter, so that "all attempts to express the diarrhoea mortality of a given place as a function of the temperature only have failed." Soil temperature is one factor between which and the death-rate from bowel complaints some relation has been made out.

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In support of the germ theory it has often been pointed out that exposure to the sun does not always explain sunstroke, for at sea the tropical sun is less fatal than on land, and places with apparently similar conditions differ much as regards the prevalence of sunstroke.

The soldier on service in a tropical country must be carefully looked after to avoid his falling a victim to sunstroke, as the extreme fatigue, exposure, and overcrowding incidental to service in the field are strong predisposing factors to this serious disability.

Sunstroke is most common amongst those who are as the saying goes "do themselves well." To do one's self well in the hot weather is the most foolish form of self-indulgence. The best protection against sunstroke and heat prostration in general is loose clothing and loose and large topees, and, when possible, avoidance of the sun. Over-fatigue and violent exercise are the strongest predisposing causes.

Tropical disease and death-rates, as has been abundantly shown, can be much reduced by proper attention to sanitary laws, so that these rates may not be much, if any, higher than those in the extra-tropics. And with the increasing knowledge of the nature and prevention of tropical diseases, as well as by means of modern sanitary methods, future armies in the tropics should be able to withstand disease almost as well as armies in Europe in former days.

The white soldier in the tropics is "always in campaign; if not against the enemy, at least against the climate," but for a successful campaign a good knowledge of the enemy's resources is the first essential, and this knowledge the British soldier at any rate is rapidly acquiring, so that the casualties in the campaign against climate in India at any rate are rapidly reaching something almost approaching a negligible figure.

*Conclusion.*—The old view concerning the paramount influence of climate in tropical campaigns can now be replaced by the view that good hygiene can defeat the worst climate that nature ever invented. Medical science has done much to stamp out some diseases, such as small-pox, and it will in time stamp out many others. Malarial parasites were everywhere prevalent in England during Elizabethan days. In the Emperor Babar's time the rhinoceros was common in Peshawar. Now the malarial parasite is as unknown in England as the rhinoceros is on the North West Frontier. May we not hope that the malarial parasite may yet become as rare as the rhinoceros in Indian cantonments?

obstinate enemy out of a country which is advantageous to him. The engagements began late, the advance of the firing line was impeded by snow, the early evening put an end to fighting, just as the disintegration of the enemy's lines showed success to be within reach. The length of the winter's night, too, made it possible for him to rally again, to occupy fresh positions, to receive reinforcements and gather himself together for renewed resistance on the morrow. The process of destruction which was being wrought in the French army was so frequently interrupted, that it lost its force. The Germans, had it been summer, would have completed in three or four days what, in winter, cost them seven to accomplish. Day, too, reduced results by half, for in war rapidity multiplies success. The same author points out that, among the causes which led to the loss of the Battle of Kunersdorf, the great heat protracted during a long summer day must be reckoned. But if the season did not favour Frederick at Kunersdorf, it was kind to Zieten at Torgau, for it was the coming darkness which enabled that leader to take and hold the heights of Stupitz. The duration of daylight is certainly a factor to be reckoned with when a battle can be pre-arranged.

It is scarcely necessary to point out how much the health of troops is affected by unfavourable or trying weather, disastrously when want of supplies is added to its inclemency. Our own wars bring this home to us in the story of the Walcheren Expedition, and more recently of the Crimea. "But it was felt even by the successful Germans in 1870, and especially so during the siege of Belfort. Such considerations, lead us to reflect how much sanitation and questions of health must be studied in relation to geographical conditions. The campaign of 1870 when the great issues was decided in summer, and in an extraordinarily rich and highly populated country, cost the Germans 400,000 sick. The average duration of a sick man's absence from his regiment may be taken as twenty days. The extent to which the fighting efficiency of an army suffers by its tally of men in hospital can easily be calculated. The climate and degree of civilization of the land in which war is waged will in many cases influence the sanitary measures that we must take. Obviously a war in the East or in tropical climates demands quite different preparations to those for a campaign in Europe."

Climate, as we use the term, is the resultant of the average atmospheric conditions, or, more simply, it is the average condition of the atmosphere.

Weather is a single occurrence or event in the series of conditions which make up a climate.

The climate of a place is in a sense its average weather. The value of recorded atmospheric conditions can be determined only by means of careful observations continued for a period sufficiently long to give accurate results.

Climatology, or the study of climates, is largely a descriptive science and aims at giving as clear a picture as possible of the inter-action of the various atmospheric phenomena at any place or

the earth's surface. It rests on physics and geography, the latter being a very prominent factor. Its main object is to be of practical service to man, and therefore its methods of treatment lay most stress on the elements which are most important to life.

Climate and crops, climate and industry, climate and health are subjects of vital interest to the soldier.

As General May points out in the quotation I have selected as a text, no other science affects the soldier so closely in his daily life in peace and war.

So great is the variety of climates to be found in different parts of the world that it has long been customary to classify them into certain broad belts, called the climatic zones. These I need scarcely remind you are the so-called torrid, the two temperate, and the two frigid zones.

The torrid, better styled the tropical zone, is limited on the north and south by the two tropics of Cancer and Capricorn, the equator dividing the zone into two equal parts.

The temperate zones are limited towards the equator by the tropics and towards the poles by the Arctic and Antarctic circles.

The two polar zones are caps covering the polar regions and bounded on the sides towards the equator by the Arctic and Antarctic circles.

These zones divide up the hemispheres very unevenly, as they constitute the following percentage of the earth's surface:—

Tropical Zone	...	...	...	...	40 per cent.
Temperate Zone	...	...	...	...	52 „
Polar	...	...	...	...	8 „

This broad division of the earth's surface into zones is necessary as a first step in the study of climate, but it is not satisfactory when a more detailed discussion is undertaken.

The physical characters of the earth's surface make further subdivision desirable, and under the control of these different physical conditions the climatic elements unite to produce certain distinct types called—

1. Continental, with its varieties.
  - (a) Desert, an extreme variety.
  - (b) Littoral, a type modified by the proximity of the sea.
  - (c) Monsoon, a class modified by certain trade winds.
2. Marine or Oceanic Climates.
- 3 Mountain Climates.

1. *Continental Climates*:—These are, as a rule, severe. The annual range of temperature increases with the distance from the sea and the regular daily ranges are large, reaching 40 degrees and even more.

In winter clear crisp days, which are followed by cold calm nights, are interrupted from time to time by spells of cloudy, windy weather; in summer, clear calm nights, followed by hot days with increasing wind velocity and heavy clouds towards noon and often by thunderstorms late in the afternoon; these are the typical weather

conditions of the continental interiors in the higher latitudes and they are of special interest to us in India.

(a) *Desert Climate*:—It is a curious fact that desert and marine climates, the two extremes of the climatic scale, resemble each other to some extent.

Desert air, though often dusty by day is, like ocean air, remarkably free from micro-organisms.

Again, deserts, like oceans, have high wind velocities, but the winds are most likely to be prevalent by day, whilst the nights are generally calm and relatively cool.

Curious conditions of drainage result from deficient rainfall, and rivers "wither away" or end in brackish lakes. Desert plants protect themselves against the attacks of animals by thorns and against evaporation by means of hard surfaces and an absence of leaves. Likewise the life of a man is strikingly controlled by the climatic peculiarities of strong sunshine, heat, and dust.

(b) *Coast and Littoral Climates*:—Between the pure marine and pure continental types the coasts furnish every possible gradation. Prevailing winds here act as important controlling influences. When these blow from the ocean as on the western coasts of the temperate zones the climates are more marine in character, but when they are off shore as on the eastern coasts of the same zones a modified type of continental climate prevails even up to the sea coasts.

(c) *Monsoon Climate*:—Exceptions to the general rule that east coasts have rainier climates in trade winds latitudes are found in India where the western coast is abundantly watered by the wet southwest monsoon.

In India there are really three seasons—one cold during the winter monsoon, one hot in the transition season, and one wet during the summer monsoon.

Comparatively little rain occurs in winter except in the northern provinces, and the trying climate of the damp transitional period which occurs in the autumn is familiar to most of us.

2. *Marine or Ocean Climates*:—These are temperate, damp, and cloudy. Ocean air is, as is well known, clearer and purer than land air, and is in more active motion because the friction of air on water is less than the friction of air on land.

3. *Mountain Climates*:—The climate of mountains is characterised by abundant sunshine and clear, pure dry air.

It is often said that the climate of such places as Chertsey is warmer than that of plain stations like Peshawar in the winter months. It is a well-known scientific fact that this is the case, as the air flows down the mountain sides and collects in the valleys below. This phenomenon plays an important part in the modern utilisation of mountains as health resorts.

In the rare dry air of mountains evaporation is rapid, the skin dries and cracks, and thirst is increased—a condition with which all Anglo-Indians are familiar.

Having briefly glanced at the general features of climates as they affect soldiers as well as individuals, we may now proceed to consider the subject in its relation to the military commander, especially in war.

The subject may be considered under three headings:—

1. The influence of climate on the fighting efficiency of races.
2. The influence of climatic surroundings on the hygiene of the soldier.
3. The influence of climatic phenomena in various campaigns, especially in relation to the sanitation of armies.

1. *The influence of climate on fighting efficiency.*— Lord Bacon in his essay on the *Vicissitudes of Things* gives a remarkably able analysis of the influence of climate on the warlike tendencies of peoples.

He says:—" Wars in ancient times seemed to move from east to west, for the Persians, Assyrians, Arabians, and Tartars were all Eastern people. It is true the Gauls were Western, but we read of only two incursions of theirs, one to Gallo-Graecia (Gallicia in Asia Minor), the other to Rome. But east to west have no certain points to heaven, any no more have the wars from east to west any certainty of observation, but north and south are fixed, and it hath seldom or never been seen that the far southern people have invaded the northern, but contrariwise, whereby it is manifest that the northern tract of the world is in nature the more martial region, be it in respect of the stars of that hemisphere, or of the greater continents that are upon the north, whereas the south part for all that is known is almost all sea (this guess has been corroborated by subsequent discovery) or, (which is most apparent) of the cold of the northern parts, which is that which, without the aid of discipline, doth make the bodies hardiest and the courage warmest."

In the *Growth of the Empire*, by Arthur W. Jose, Bacon's view is supported by this chronicler of the Empire who places physical strength as the first of the qualities specially useful in the work of colonisation. He says:—" In the competition for colonies all parts of the earth have been occupied and that nation must be most successful which can best stand all varieties of climate and come through all dangers with least permanent harm. Such a nation will be bred in temperate climates and, on the whole, the farther north the better. Britain, France, and Germany have the advantage over Mediterranean nations."

Dr. Miller Maguire in his *Military Geography*, however, challenges this view, and says it cannot stand the test of either ancient or modern history.

" In truth, the temperate zone which is intermediate between the north and the equator has produced all the greatest conquerors from Semiramis to Alexander, from Hannibal to William of Normandy, Gustavus and Napoleon. The majority of the Moors must also have come from the temperate zone, as certainly came all the

Manchurian, Mongol, and Tartar leaders. Even the greatest patriots and liberators of history belonged to the same zone as that which gave birth to Arminius, Matthias, Henry IV, Washington, and Bonaparte. It will be found that the temperate zone is the best for military as well as civil virtues, but Lord Bacon's saving clause regarding discipline applies whether to the northern or southern parts of the temperate zone, or to the world at large. A well-disciplined army with weapons up to the highest resources of the age, and with well-organized systems of transport, will defeat an undisciplined force wherever its base, north or south. The Macedonians were north of the other Greeks, whom they routed as they pleased. The Romans were south of Helvetia and Gaul, yet they defeated the hardy and daring inhabitants of these regions. The Saracens for a period carried all before them, east and west and south and north."

He continues that Lord Bacon makes another mistake in saying that the cold of the northern countries makes the courage warmest, pointing out that no native of Europe is braver than a tropical African. "When he is disciplined and well armed he is capable of the greatest things, and only armed with the spear and shield of savagery he was able to endanger our square at Abu Klea and at Khartoum."

"Bacon's notion that the most northern people have the hardest bodies and the warmest courage, will, moreover, not stand investigation, as the people of Spain have been at least as brave as the people of Holland, whilst in our own country the men of Cornwall and Kent are no whit inferior in any respect to the dwellers in the Orkneys."

"In the American War the men from Texas, Georgia, Carolina and Virginia fought far better man for man with inferior weapons and resources than the men from Boston, New York, Chicago, and Pittsburg. But stranger than all, the natives of Southern Europe in Napoleon's army bore the cold of Russia in 1812 better than the Russians themselves, and men from the basins of the Rhine and the Po displayed far more powers of endurance than men from Picardy, Belgium and Prussia. Again, when exposed to hardships in the Balkan Peninsula in 1877, the Russians from the steppes of Caucasus made a very poor display of staying powers as compared with the Turks from Asia Minor."

Dr. Maguire holds that for many reasons—such, for instance, as the necessity for constant exercise—and hard fare the people of mountain districts ought to defeat the people of the plain if equally disciplined and well-organized.

Hence he attributes the victories won by Swiss, Scottish, and Swedish mercenaries in European wars from 1500 to 1700.

To the same cause may be traced the high esteem in which the Gorkhas are held amongst the numerous races who march under the banner of St. George.

Plains however produce heroes as well as mountains, and the fortitude of the Red Indians of the Mississippi basin and their gallantry in war before they were utterly broken by the United

States is described as far superior to anything conceived by the most severe of the Spartan kings.

On the whole, however, we think it must be admitted that Lord Bacon is right, as in temperate climates physical and mental development is stimulated by conditions neither too easy nor too hard.

Extremes of heat and cold cause lethargy, whilst where man finds the seasons succeeding each other with regularity, he tries to make nature his servant and develops skill in evading the effects of heat and cold.

The men from the cold northern latitudes have energy and keenness in a more marked degree than those from warmer climates.

Compare, for example, the people of Scinde and Bengal with the Afridis and other trans-border Pathans, who spend their lives in what is practically a temperate climate.

2. *The Influence of climatic surroundings on the hygiene of the soldier*:—Turning to this topic we find that from the earliest times medical and lay writers have been strongly prejudiced in favour of a causal connection between atmospheric conditions and disease.

Practical experience has, however, led to very contradictory conclusions; for instance, diseases usually characteristic of one zone are known to spread widely over other zones, and diseases which usually prefer the warmer months sometimes occur in the coldest.

Most of the disagreement comes from the fact that not only may the different weather elements themselves, temperature, moisture, wind, sunshine, and so on, each have some effect in the production of a disease, which it is impossible to determine, but so many other factors are concerned in the matter that confusion and contradiction in the conclusions arrived at are well nigh inevitable. Sanitation, food, water, habits, altitude, character, and moisture of the soil, race, traffic, and other controls serve to complicate the problem still further. In most studies of climate and health, some, or even many, of these factors have not received attention, and hence the results have usually been incomplete. Local, peculiar, and temporary conditions may play a large part in the prevalence of disease. Overcrowding under unhygienic conditions, especially, during cold weather, and traffic by rail, steam, caravan, or on foot are usually more important than climate. The frequent escape of mountain and desert tribes from epidemics is to be attributed in most cases not to their climatic advantages but to the smaller chance of importing disease, because of little intercourse with the outside world, and of spreading it, when imported, because of the scattered population.

Nowadays the cause of disease is no longer sought directly in meteorological conditions, but in the effects, more or less direct, of these conditions upon the micro-organisms which are the specific causes of disease. Atmospheric conditions may help or may retard the development of microbes, and may strengthen or weaken the



individual's power of resistance against the attacks of germs as well as affect his susceptibility.

Winds were at one time regarded as the chief agents in spreading epidemics; now it is known that diseases cannot be carried far by winds, for the micro-organisms of disease do not long maintain their power in the free air and under the sun. Rain has been supposed directly to control the distribution of disease, but we believe that it only acts indirectly, through drinking water or through its control of the dust in the air. Dust may and does convey germs of infectious diseases, and aggravates affections of the eyes, lungs, but harmful exhalations are no longer believed to be given off by the soil.

Well within my own recollection we eluded our ignorance with regard to the cause of malaria by talking learnedly of miasma arising from the soil, and I have actually been pointed out the miasma must hanging over an Indian village.

Now we know that the mosquito is the miasma and that hygiene and sound sanitation will banish her from our surroundings.

For the purposes of this section we may disregard all other climatic considerations and deal with our subject under the headings of (A)—Campaigns in hot climates, and (B)—Campaigns in cold climates.

Let us consider the former first.

#### (A)—Campaigns in hot climates.

The uniformly high temperatures of the tropics, especially when combined with high humidity and the characteristic very small daily variation of temperature, have certain well-established effects on the human organism. Amongst these the following are commonly noted—

1. Increased respiration.
2. Decreased perspiration.
3. Profuse perspiration.
4. Lessened activity of stomach and intestines, and tendency to digestive disorders.
5. A depression of bodily and mental activity.
6. Enervation.
7. Disinclination to exertion—in fact, a general, indefinite, reduction of vitality.
8. Increased activity of the liver.
9. Increased action of the kidneys.

Deep hot air contains less oxygen than cool air and therefore less of breathing it is equivalent to the production of perspiration on the body. As the heat increases after the noon there is a corresponding lowered vitality and lessened capacity for work and greater need of water any work which is undertaken. All this renders the body more prone to catch disease as a fatigue and at once if needed is more prone to catch things than a vigorous healthy one.

It seems like a contradiction, but it is an undoubted fact, that the danger of catching cold is far greater in the tropics than in temperate climates, and must therefore be carefully guarded against. Lord Wolseley has said of the tropics, "Not to get cold is to avoid almost certainly all the causes of disease," and a recent writer has well said that these words should be inscribed on the walls of all the barracks in the tropics.

Besides the more or less direct effects of exposure to tropical sun and heat, such as sunstroke, heat exhaustion, and the like, the campaigner in hot countries has to think of malaria in its various forms, and dysentery, the two worst enemies of the white man in the tropics: not to mention their less powerful but equally dreaded allies, tropical abscess of the liver, cholera, and plague.

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Finally the poor overworked liver gets one or more jars in the form of chills such as may arise from a cold bath, a wetting, or from lying uncovered on a warm night in a current of air, with the result that our young friend goes to hospital and is lucky if he escapes having to take a trip to Europe as the result of his folly.

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Tropical disease and death-rates, as has been abundantly shown, can be much reduced by proper attention to sanitary laws, so that these rates may not be much, if any, higher than those in the extra-tropics. And with the increasing knowledge of the nature and prevention of tropical diseases, as well as by means of modern sanitary methods, future armies in the tropics should be able to withstand disease almost as well as armies in Europe in former days.

The white soldier in the tropics is "always in campaign; if not against the enemy, at least against the climate," but for a successful campaign a good knowledge of the enemy's resources is the first essential, and this knowledge the British soldier at any rate is rapidly acquiring, so that the casualties in the campaign against climate in India at any rate are rapidly reaching something almost approaching a negligible figure.

*Conclusion.*—The old view concerning the paramount influence of climate in tropical campaigns can now be replaced by the view that good hygiene can defeat the worst climate that nature ever invented. Medical science has done much to stamp out some diseases, such as small-pox, and it will in time stamp out many others. Malarial parasites were everywhere prevalent in England during Elizabethan days. In the Emperor Babar's time the rhinoceros was common in Peshawar. Now the malarial parasite is as unknown in England as the rhinoceros is on the North West Frontier. May we not hope that the malarial parasite may yet become as rare as the rhinoceros in Indian cantonments?

individual's power of resistance against the attacks of germs, as well as affect his susceptibility.

Winds were at one time regarded as the chief agents in spreading epidemics; now it is known that diseases cannot be carried far by winds, for the micro-organisms of disease do not long maintain their power in the free air and under the sun. Rain has been supposed directly to control the distribution of disease; now we believe that it only acts indirectly, through drinking water or through its control of the dust in the air. Dust may and does contain the germs of infectious diseases, and aggravates affections of the eyes and lungs, but harmful exhalations are no longer believed to be generated by the soil.

Well within my own recollection we cloaked our ignorance with regard to the cause of malaria by talking learnedly of miasms arising from the soil, and I have actually been pointed out the miasma must hanging over an Indian village.

Now we know that the mosquito is the miasma and that drainage and sound sanitation will banish her from our surroundings.

For the purposes of this section we may disregard all other climatic considerations and deal with our subject under the simple headings of (*A*)—Campaigns in hot climates, and (*B*)—Campaigns in cold climates.

Let us consider the former first.

#### *(A) — Campaigns in hot climates.*

The uniformly high temperatures of the tropics, especially when combined with high humidity and the characteristically small daily variation of temperature have certainly well established effects on the human organism. Amongst these the following are commonly noted —

1. Increased respiration.
2. Decreased perspiration.
3. Profuse perspiration.
4. Lessened activity of stomach and intestines, and tendency to digestive disorders.
5. A depression of bodily and mental activity.
6. Emaciation.
7. Disinclination to exertion; in fact, a general, ill-defined condition of debility.
8. Increased activity of the liver.
9. Increased activity of the kidneys.

Prophylactic measures consist, even in the most arid and the hottest of breathing apparatus, and the use of protective clothing, and the use of the blood. As the temperature is so high, the blood is so rapidly renewed, and the circulation is so rapid, that the body is able to resist disease as a thing that it is not in the least more prone to "catch things" than a vigorous healthy one.

It seems like a contradiction, but it is an undoubted fact, that the danger of catching cold is far greater in the tropics than in temperate climates, and must therefore be carefully guarded against. Lord Wolseley has said of the tropics, "Not to get cold is to avoid almost certainly all the causes of disease," and a recent writer has well said that these words should be inscribed on the walls of all the barracks in the tropics.

Besides the more or less direct effects of exposure to tropical sun and heat, such as sunstroke, heat exhaustion, and the like, the campaigner in hot countries has to think of malaria in its various forms, and dysentery, the two worst enemies of the white man in the tropics: not to mention their less powerful but equally dreaded allies, tropical abscess of the liver, cholera, and plague.

The fact that plague, and to a large extent cholera, are practically limited to the tropics, is the result of modern sanitary precautions in temperate latitudes. It is the unsanitary conditions that prevail amongst tropical peoples which favour the spread of these and similar diseases, and not the climate *per se*. The climate is not the sole, nor even in many cases the determining factor of so-called tropical disease, and almost the most remarkable thing about Oriental conditions of life is that with the sole exception of the effects of the sun the European "stands the *climate*" better than the natives themselves. When he does not do so more often than not he has himself and not the climate to blame. For example, the young British officer direct from Sandhurst on arriving in India finds himself surrounded by rich food, wine, and short drinks to which he may not have been accustomed at Home. At first, the change, the excitement of novelty, and high temperature act as stimulants to appetite, and the excessive loss of fluid by sweating, increased very often by excessive and unnecessarily severe exercise, create a powerful thirst. Little wonder, therefore, that in such circumstances the youth, having the appetite and opportunity of gratifying it, is apt to indulge himself beyond safe limits. He is made lazy by the heat and concentrates all the exercise of the day into a comparatively few minutes of rackets or polo in the late afternoon. Very likely he sits up late at night, drinking and smoking, so that in the morning he is too sleepy to take exercise at the best time of the day. And so it comes about that too much food and alcohol, and the diminished excretion incident to high temperature throw a very large and unusual amount of extra work on his liver.

Very often the liver rises to the occasion, but it often "jibs," and too often warnings in the shape of headaches, a feeling of weight or fullness, or even of pain in the region of the liver, with a general feeling of being "out of sorts" are disregarded.

Finally the poor overworked liver gets one or more jars in the form of chills such as may arise from a cold bath, a wetting, or from lying uncovered on a warm night in a current of air, with the result that our young friend goes to hospital and is lucky if he escapes having to take a trip to Europe as the result of his folly.

*(B)—Campaigning in Cold Climates.*

Frederick the Great has remarked not without reason: "Winter campaigns ruin troops by sicknesses caused by them, while the continued state of activity to which the troops must be subjected interferes with recruiting and refitting, as well as with the re-arrangements of the whole organization for the supply of equipment and food. It is certain that the best army in the world cannot stand this kind of campaign for long, and on this account, winter campaigns should be avoided as being the most costly of all warlike operations."

In the eighteenth century operations by both belligerents ceased on the approach of the winter season, but the growth of mobile armies with the consequent loss to the country in labour and the difficulty of feeding and clothing great masses of men, makes it compulsory in these times that decisive results should be obtained as quickly as possible, even under the most unfavourable climatic conditions. The opinion of the Archduke Charles: that "Winter campaigns are mostly followed by the certain ruin of armies," is not borne out by the offensive operations of the German Army in 1871. Nevertheless, the Germans suffered severely in consequence. To the losses on the battlefield were added casualties due to the cold and inclement weather. It is significant of the enormous losses, that a brigade at Le Mans only mustered 280 all ranks, whilst one division was scarcely the strength of a brigade.

Extensive preparations for clothing and maintenance and constant care by the officers for those under them, and strict discipline, are as essential in cold climates as they are in the tropics.

A force which has had some experience of severe weather soon learns how best to combat the evil influences of cold and is therefore able to withstand increasing low temperatures.

For the body to be in the possession of its full vigour it requires a certain amount of stored up warmth, which enables it to stand higher degrees of cold without injury to health. Slight cold invigorates and refreshes, but should the store of warmth in the body fail, and help cannot be administered by nourishment and clothing, then a feeling of pain sets in which may be followed by stiffness and uselessness of the affected limb.

*Protection against cold.*—Loose clothing is preferable in cold as in warm climates. Every tight-fitting garment is a disadvantage, inasmuch as it prevents circulation and encourages the limbs to become frost-bitten.

The greatest attention must be paid to the care of boots, and the soldier must exercise unremitting care in this duty. It goes without saying that boots must always be well cleaned from mud and then well rubbed with grease so that they have a dull appearance. In war there will never be any lack of beef or mutton tallow. The inexperienced soldier naturally likes to place his wet and cold boots near the fire, but this is very harmful to the leather as it becomes brittle and also for the feet as they become more susceptible to frost.

The best plan is to take off the boots one after the other and hold them bottom upwards for a short time over the fire so that they may become filled with warm air. If the boots are then pulled on quickly the warmth will remain in them for a fairly long time.

For use in cold climates the boot must be so loose, that (1) when wet through, it may be pulled on and off with ease, and (2) that it does not pinch when worn with warm soles inside, over thick socks.

The relation between boots and military efficiency was so appreciated in 1870 that during the forced marches of the 2nd army of the Loire, orders were given for the company shoemakers to drive, so that they might sleep *en route* and, on arrival in camp be ready to work all night. Civil shoe-makers were also employed and even taken on to the next camping ground. The company shoemakers were housed in specially selected quarters and were exempted from all duties, so that they might devote all their time to shoe-making, and in most cases they received extra pay as well. Requisitioning materials for shoe-making from the various districts, and commandeering the existing supply of boots nearly always proved a failure.

A plan recommended by the Germans for keeping the toes warm is to place small slips of paper between them. Soft but not brittle paper over the insteps before pulling on the socks, keeps the feet very warm, but wears away quickly when marching and is only suitable for mounted arms.

Cold produces thirst in the same way as heat and must be fought against. The eating of snow must be strictly prohibited as it causes rheumatic toothache and diarrhoea.

Cold increases the appetite and a richer and more nourishing diet than generally provided is essential for a winter campaign. Fat and nitrogenous food, such as cheese, bacon, biscuits, and chocolate are specially recommended.

The German authorities speak very highly of chocolate as a concentrated food which takes up a proportionally small amount of space, does not spoil in the winter and by its wholesome action on the stomach acts as a preventative of dysentery. Soup should be cooked on every opportunity, and in order to be able to get a good fire quickly in rain and snow, every man should carry two pieces of dry kindling.

When possible, pepper or garlic should always be added to the soup.

Plenty of tea and sugar should be taken by the Supply Corps. Unfortunately these articles take up much room, but they will well repay the difficulties of transporting them if these can be overcome. Compressed tea is never so good as loose tea, besides its quality is difficult to test. Compressed coffee is equally not recommended as it loses its aroma so quickly and is very susceptible to damp. It may be advantageous, however, when troops are halted, to provide



extract of coffee, as this can be made by the simple addition of hot water.

The temperature exercises a powerful influence on marches. Dry cold exercises a beneficial effect, but snow, besides being injurious to the health by soaking the clothing, cripples both horse and foot. When the temperature falls much below zero, weary soldiers become sleepy, lazy, apathetic and lose all their energy. They are then threatened with a great danger which demands the whole watchfulness and energy of those in authority. The lazy, inert man gets frost-bitten very easily, and the sleepy one is in danger of freezing to death. The boundary between sleep and death through intense cold is hardly distinguishable.

Provided proper supervision is exercised, campaigning in severe cold is less fatiguing and dangerous than in excessive heat, and even in Polar expeditions a good state of health prevails, with the exception of scurvy which is due to the absence of fresh vegetables and a monotonous diet of tinned provision. Mounted men feel the cold more than those marching, and for this reason it is necessary to dismount them frequently and to bind straw round the stirrup irons.

Cleanliness and rubbing in of grease or vaseline are the best protection against frost-bites of the ears and feet.

Halts should be very short, as a long period of inactivity when the foot is hot is very apt to produce chilblains. The taking of spirits is not recommended, for the first stimulating effect is followed by a relaxation which is the more pronounced in winter since cold in most cases weakens men's will-power. After the passage of the Balkans it was found that the hot-blooded Turks, who were unaccustomed to alcoholic drink, had far fewer casualties from the cold than the Russians, notwithstanding that those on the Shipka Pass and on the Balkans north of Sofia were situated 500 feet higher and in positions very much exposed to the winds.

The power of resisting cold may be increased by accustoming and hardening the body to it, by abundant food, and sufficient sleep. Great-coats should not be worn on the march, as they considerably increase the difficulty and fatigue of marching and cause the men to break out in sweat. In deep snow, owing to the warmth from the body, smaller or larger icicles form on the ends of the coat even when unfastened, thereby increasing its weight and burdening the thighs.

I cannot more fitly close this section of our subject than by quoting from Captain W. V. Herbert's *Defence of Plevna*, in which he graphically describes the horrors resulting from a severe climate and want of food :

"The sentry service in our own redoubt, as well as throughout the camp, was of a cruelly severe character in the rigour of a Bulgarian winter. The original four hours had to be reduced to two, then to one hour. Fixed, almost buried alive, in a hole four feet deep, with the upper part of the body exposed to the bitter blasts, the lower embedded in the frozen ground, unable to move (the slightest attempt at a trot, the very act of stepping out of the hole, attracted

the enemy's bullets), insufficiently fed, compelled to exercise a ceaseless vigilance, struggling against the dangerous drowsiness engendered by frost, the men looked upon sentry duty as the last refinement of torture. Our splendid great-coats were invaluable to us. When snow was on the ground the cold was less severely felt, snow with five degrees below freezing point was better than one or two degrees above freezing point without snow. The long, winding line of sentries, lost in the murky distance of a bleak winter day, with only the dark hoods and the bayonets visible on the white ground, presented a grotesque and striking appearance.

"By the beginning of November the rations had already been reduced, more particularly as regards meat. Bread made of maize-meal and baked in Plevna took the place of biscuits, the large stock of the latter commodity being retained in view of a possible sortie and a march across a famine-stricken country."

This was at Plevna little more than thirty years ago.

Passing now to the final division of our subject we proceed to consider:—

3. *The Influence of climatic phenomena in various campaigns, especially with reference to the sanitation of armies*:—Mr. Dallas truly says: "The army is the only section of the community which is supposed to be indifferent to climatic influences. For centuries the soldier's clothes in every nation were designed with the mere object of display and with no idea of protection and even to the present day, while the civil population protects itself from the rain with mackintoshes and from the sun with umbrellas, the soldier in uniform is compelled by custom to trust in the one case to the regulation great-coat and in the other to the regulation helmet."

But though individually the soldier may appear to ignore the weather, collectively he is as dependent on its vagaries as any other class of the community, and many military schemes have been upset owing to ignorance of, or indifference to, meteorological conditions. Soldiers must necessarily be prepared to march and fight in blazing heat or freezing cold, in snow or rain, or in blinding dust, but the objects of a careful commander in nearly all cases is to deploy his men on the field, at the moment of battle, in as fit a condition as possible, and this can only be accomplished by studying the question of food, drink, clothing, and marching in their relation to the climate of the region within which operations are to be carried out. There are of course freaks or whims of the weather which cannot be foreseen: incidents which appear to depend on the good luck, or the bad luck, which undoubtedly accompany particular commanders or nations at certain periods of their existence.

The course of ancient and modern history is dotted with instances of the influence of the weather on military expeditions. There is the case with which we have all been intimate from our childhood of the Israelites crossing the Red Sea on dry ground, the waters of the sea having been driven back by a strong east wind all the previous night, and the subsequent overthrow of the Egyptians.

by the return of the waters of the sea when the east wind died down. In the year 700 (B.C.), as is recorded by Isaiah, Sennacherib, King of Assyria, marched a great army through Palestine to attack Egypt. The Jews hastily made peace with the invader, and the Assyrians passed on towards Egypt: but after a time Sennacherib doubted the wisdom of leaving a fortified town like Jerusalem in his rear and turned back to destroy it. Of this great army nothing further was ever heard, and its destruction on the frontier between Palestine and Egypt, though a still unexplained catastrophe is supposed to have been caused by the simoor.

Similarly the great Alexander's failure to complete the conquest of this country was due to the fact that his troops, who crossed the Indus above Attock in the spring of 327 (B.C.), were worn out by the heat of the Punjab summer, and their spirit was broken by the hurricanes and the rain of the subsequent south-west monsoon.

These incidents are, however, only valuable as showing the actual influence of climatic conditions on some of the most important military enterprises of the past, as obviously we know too little about the expeditions individually, and too little of the "Intelligence Branches" possessed by the ancients, to say whether the recorded failures were due to want of knowledge or to want of care.

In more recent times there are, however, well-authenticated examples of expeditions which have succeeded owing to anticipatory study of the weather over the area in which the operations were to be undertaken, or have failed owing to the neglect of this study.

One of the most remarkable, if rather hackneyed instances of the overthrow of an army by the weather, is that afforded by Napoleon's invasion of Russia. The great Emperor entered Russia on the 25th June 1812. On the 29th June a storm of great violence broke over the army, followed by five days of exceedingly heavy rain. The roads immediately became almost impassable. Napoleon had not calculated on this rainfall, and his supply of horses had been estimated on the basis of continued fine weather, so that, as soon as the roads became water-logged, a heavy wastage of horses occurred, and the mobility of the army from this time was seriously crippled. The results were so serious as thoroughly to disorganize the vast train of supplies, and the practical failure of the expedition commenced from this date. In thus calculating on steady fine weather, Napoleon must have been misled, or have failed to make enquiries, as to the prevailing climatic conditions over the region between the Polish frontier and the Russian capital. The wettest period of the year in this locality is the end of June, the month of July, and the beginning of August, and the heavy rains experienced by Napoleon, though ascribed by him to bad luck, were in reality not exceptional and should not have been unexpected.

Napoleon reached Moscow early in September, and on the 15th the conflagration commenced, which rendered the continued occupation of the town impracticable. Napoleon, however, delayed his retirement for five weeks and then complained of the Russian

winter. On the 17th October leather and linen were issued to the French troops, but it was then too late to make shoes and shirts, and there was no attempt made to provide the soldiers with warm clothing or gloves, so that the army started on its retirement with the same clothing the men had worn during their advance in summer. The retreat commenced on the 18th October in beautiful weather, and on the 27th October Napoleon announced, in his *bulletin* of that date that fine weather would continue for eight days longer, by which date the army would be in their new quarters. Oddly enough, Napoleon's reputation as a weather prophet never having been recognised, the meteorological portion of the forecast was fulfilled, whilst the military portion failed completely. Not a man of the Moscow army had reached Smolensk when the winter began in earnest. The whole earth was covered with a white pall, and immediately it became impossible to procure the scantiest food. During November and December the troops struggled on towards the frontier, undergoing frightful miseries.

The number of troops which entered Russia was 630,058 and of these only about 60,000 returned. Historians say "that Napoleon was beaten before the first snowflake fell." This is no doubt true as regards the success of his expedition, but the greater part of the army might have returned and wintered at Wilna had the winter been properly anticipated. His overwhelming disasters, which deprived him permanently of half a million of soldiers, arose from ignoring the approach of winter, and by this he lost scores of thousands of men unnecessarily.

Another, but less striking instance of a military calamity, resulting from neglect of the weather, is afforded by our own carelessness and ignorance during the course of the Crimean campaign. The entire stock of food, corn, and hay, provided by the commissariat for a couple of months for the English army, was stowed away in sailing vessels which were ordered to lie outside Balaclava Harbour, though it was known they had to ride at anchor on a rocky bottom with a terrible coast all round the Bay: and the instructions were given although it was notorious that the place was subject in the autumn to violent storms of wind. A hurricane arose on the night of the 14th-15th November 1854, and the whole of these ships were lost with all the food and clothing of the soldiers, and provender for the horses. Lord Wolseley in his "Story" mentions that even when he arrived, a month later, the whole coast on each side of the entrance was a mass of wreckage—the result of the great and disastrous storm of the 15th. Largely as a result of this storm, or rather as a result of this carelessness and ignorance regarding the possible weather, Lord Wolseley says that the soldiers "during the winter (1854-55) often lived on offal and garbage" and our starved and overworked troops were rather in the position of the besieged than of the besiegers.

As regards this storm, it was subsequently evident from a mere cursory study, especially of its rate and direction of movement, that

timely notice of its approach might have been issued to the French and English commanders and the immense damage to the armed fleets and transports might have been mitigated, if not altogether avoided.

If this was too much to expect in those early days of telegraphy and meteorology, it may be mentioned that Dr. Russell, the celebrated *Times* war correspondent, states that a warning of what might happen was given on Friday, November 10th, 1854, when a similar but slighter gale was experienced. The wind on that occasion set right into the bay and raised a high sea, which was only ridden out by the vessels at anchor owing to the fact that they were not sailing vessels, but were able to steam ahead against wind and sea. This particular gale soon moderated, but the warning was disregarded, and the luckless sailing transports which subsequently arrived were ordered or allowed to remain outside until the hurricane of the 14th-15th rushed down on them, carried them in, and wrecked them on the rock-bound coast. (*Weather and Warfare* W. H. Davis, Esq., Journal of the U. S. I. of India, Vol. XXXIII, 1904.)

Out of 24,000 British who perished in the Crimea, only 4,000 were wounded: the remainder died of cholera and other diseases brought on by hardship and exposure, and no small proportion of deaths was due to neglect.

In Cuba, in the war of 1898, about 6,000 United States soldiers died of wounds, but some 6,000 or more of disease, and a large proportion of these deaths were due to defective medical and sanitary arrangements. This is how Mr. Atkins describes the condition of the Army Medical Corps and the weather. Speaking of the night after the fighting of 3rd July, he says:—

"There were not nearly enough tents, cots, medicines, doctors, nurses or carriers. Everything was insufficient. I have never seen anything more pitiable than the spectacle of wounded men lying all night without a tent-covering over them on the muddy ground and in the soaking dew. Night on a hospital ground was a night of horror: there was moaning everywhere, and one night I remember two men calling all night for some one to kill them."

Of another night, over a week later, he says:—

"A thunderstorm came—such thunder as I have never heard and never thought to hear—so near, tremendous and splitting. With it came a tropical storm of rain falling in a wall so that you could not see through it. Soon the ground where I lay was under water. A volunteer regiment had arrived late at night, and had no time to encamp themselves; the morning revealed them lying in a lake. The horses were all frightened with the storm, and came round the tents whinnying. And in the middle of it all two men who had been crying out deliriously in the hospital began to wander about in the field gazing. This was a hospital in which there were cases of yellow fever."

I have tabulated for you some examples from ancient and modern times, but having demonstrated to you what an important

factor every variety of climatic phenomena has been in war, the point I wish to make is that mortality varies directly with the excellence or otherwise of our hygienic arrangements. I will only ask you to consider two contrasts of good and bad *bandobusts* in this direction. In the Ashanti War of 1854 the whole army melted away. Those who did not die were invalided. In Ashanti in 1873, Sir Garnet Wolseley, by provision and the aid of good doctors, as Mr. Justin McCarthy puts it in his *Short History of Our Own Times*, snatched victory "out of the very jaws of approaching sun and fever."

The second contrast is the rapid march of Manteuffel's two army corps with 178 guns over snow-clad mountains between Dijon and Langres between January 13th and 16th, 1871, when the Germans had no unusual sickness, whilst their opponents, Bourbaki's army, without any rapid marches and in a fertile plain, became so demoralised by sickness that 133,000 men fled across the Swiss border and so became interned in neutral country.

Colonel Hozier, in his *Franco-German War*, gives the following description of them on their arrival in Switzerland:—

"Their clothes were rent, and dropping off them in tatters; their feet and hands were frost-bitten. While the shrunk features and crouching gait told of gnawing hunger, the deep cough and hoarse voice bore witness to long nights spent on snow and frozen ground. Some had bits of wood under their bare feet to protect them from stones: others wore wooden sabots, hundreds had merely thin cotton socks, and many none at all: others who appeared well shod would show a boot without sole or heel—the exposed part of the foot, once frozen, now presenting a wound crusted with dirt. For weeks none had washed or changed their clothes, or put off their boots. Their hands were blacker than any African's. Some had lost their toes: the limbs of others were so frozen that every movement was agony. The men stated that for three days they had neither food nor fodder served out to them, and that even prior to that period of absolute famine one loaf was often shared between eight of them."

The last contrast is the more or less familiar experiences of a European and an Oriental army in Manchuria.

The reports of our attachés indicate the elaborate sanitary precautions which were undertaken by the Japanese and the utter absence of any sanitary arrangements in the lines of their antagonists.

The results were sufficiently obvious. In the Russian Army the proportion of sick to wounded was one man to 4·8 admissions for disease, whereas in the Japanese Army the proportion was one to 1·5 or nearly four times as good.

Climates and its effects are, I have ventured to insist, pre-eminently the study of soldiers of a world-wide empire, but the point, gentlemen, I have tried—I hope successfully—to make before you to-day is that nowadays every war is a doctor's war and that the climate



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As medicine progresses, we gain  
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after all entirely preventable.  
The food have robbed a residence in  
doctors, and the members of the recent  
maintained their health and vigour in spite  
and returned to their homes as fit or fitter  
they left them.

I refer to the statistics showing the remarkable  
state of the health of our army in India to show how modern  
medicine has helped us to fight against the scourges which at one  
time decimated our troops in tropical climates.

We must not, however, forget that while it is possible to attain  
these desirable results in times of peace and among civilised com-  
munities, an army in the field lives under more or less savage  
conditions; and, in these circumstances, special precautions must be  
taken to prevent the reappearance and spread of such diseases as  
cholera, enteric, typhus fever, scurvy, small-pox, and dysentery,  
which are now practically unknown in our barracks and cantonments.  
These diseases must be carefully guarded against in war, and it is  
essential that regimental officers should know how they are caused  
and how they are spread to enable them to work sympathetically  
hand in hand and in an intelligent manner with the medical  
authorities in keeping the men under their command fit to march  
and fight. On service a sick man is not only useless—he is a  
nuisance and an incumbrance; and no commander is in a position  
to make the best use of his force if he is hampered by the presence  
of more sick and wounded than he can rapidly get rid of down the  
lines of communication.

In conclusion, I think that I am only voicing the wishes of the  
meeting in proposing a hearty vote of thanks to Major Blackham  
for so ably bringing this extremely important subject before us in  
his lecture.

*WEATHER IN WAR*  
Climatic phenomena has been in war the  
mortality varies directly with the exer-  
cise arrangements. I will only ask you  
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backing sun



remaining the same the success or failure of your military operations must depend on the hygienic measures you adopt. Sound sanitation, I submit, is even more important than *Weather in War*.

THE CHAIRMAN: Ladies and Gentlemen,—We have heard several specific instances quoted in Major Blackham's interesting lecture which show how military operations may be made or marred by weather; but the whole history of war teaches the same lesson, and the account of almost any campaign of which we have a detailed record preaches an eloquent sermon on the same text.

Since I was asked to take the Chair I have been looking up the subject, and there are one or two interesting examples which I see he has not quoted. At the Shupka the 24th Division of the Russian army lost 6,000 men during the storm of 18th to 20th December 1877; Gourko lost 2,000 men frozen to death during the same storm.

In the Madagascar campaign of 1894-95, out of 15,000 men the French lost 6,000, only 21 of whom died of wounds.

The appalling effects of a tropical sun on European troops exhausted by long marches, and with a scanty supply of water, fighting in the middle of the day in unsuitable clothing and without proper head protection, are admirably illustrated by the recently published graphic account by Mr. Forrest of the hot weather campaign conducted by Sir Hugh Rose in the last phase of the war, which I saw mentioned in the *Pioneer* only a couple of days ago. In the fight at Koonth, we are told, "while the action was going on, dhooley after dhooley was brought into the field hospital with officers and men suffering from sun stroke, some dead, others prostrated, laughing and sobbing in weak delirium." Three days after the action, Sir Hugh Rose wrote, "We should have destroyed the enemy, had not the dreadful heat paralyssed the men. I was obliged four times to get off my horse from excessive dizziness."

The rebel commander so fully recognised the condition of his troops, that he issued the following General Order:—"As the European infibls either died or had to go into hospital from fighting in the sun, they are never to be attacked before noon or in the day." At Koonth we read "the prostration of the whole force had become a matter of arithmetical calculation. So many Europeans had lost so many men." Again Sir Hugh Rose writes—"Out of 56 men of the 14th Light Dragoons, forming part of our fighting escort, 17 were brought back to camp after only two hours exposure to the sun." The senior surgeon reports—"We have nearly 50 Europeans in hospital, having lost in the week 21 by sun stroke, and there is scarcely an officer on the staff fit for duty." In the fighting before Gway we are told "In one European regiment of infantry 5 officers and 81 men were struck down by the sun in a single day. In another regiment 100 men were disabled from the same cause." In another battle I know in 1878, after three hours hard combat, the enemy finally gave way, leaving 6 guns and

about 600 dead on the field. The British loss in killed and wounded was 67, and in addition 33 men died from sun stroke and 250 were taken into hospital. The men fell asleep in their tents and never awoke—apoplexy, resulting from exposure to the sun, being the immediate cause of death.

Year by year, as the science of medicine progresses, we gain fresh knowledge with regard to the causation of so-called climatic diseases, and each fresh step teaches us that those ailments which we once thought to be the inevitable consequences of living under certain meteorological conditions are after all entirely preventable.

Warm clothing and suitable food have robbed a residence in an Arctic climate of all its terrors, and the members of the recent expeditions to the poles maintained their health and vigour in spite of strenuous exertions, and returned to their homes as fit or fitter than they were when they left them.

I need only refer to the statistics showing the remarkable improvement in the health of our army in India to show how modern knowledge has helped us to fight against the scourges which at one time decimated our troops in tropical climates.

We must not, however, forget that while it is possible to attain these desirable results in times of peace and among civilised communities, an army in the field lives under more or less savage conditions; and, in these circumstances, special precautions must be taken to prevent the reappearance and spread of such diseases as cholera, enteric, typhus fever, scurvy, small-pox, and dysentery, which are now practically unknown in our barracks and cantonments. These diseases must be carefully guarded against in war, and it is essential that regimental officers should know how they are caused and how they are spread to enable them to work sympathetically hand in hand and in an intelligent manner with the medical authorities in keeping the men under their command fit to march and fight. On service a sick man is not only useless—he is a nuisance and an incumbrance; and no commander is in a position to make the best use of his force if he is hampered by the presence of more sick and wounded than he can rapidly get rid of down the lines of communication.

In conclusion, I think that I am only voicing the wishes of the meeting in proposing a hearty vote of thanks to Major Blackham for so ably bringing this extremely important subject before us in his lecture.



## THE DOMINION OF CANADA.

BY LIEUT.-COLONEL P. G. TWINING, M.V.O., R.E.

### I.—HISTORICAL.

The very early history of Canada is full of interest, but the limits of this paper do not permit a reference to any but a few of the more salient dates.

#### **Early History.**

In 1497 North America was discovered by the Cabots. The first actual landing on Canadian soil was made by Jacques Cartier of St. Malo, in France, who took formal possession of the regions around the St. Lawrence estuary in the name of his royal master in 1534. No attempt at French colonisation was, however, made until 1608, when Champlain with a few French settlers wintered at Quebec and established there the seat of French rule in North America. In 1615 Champlain made a remarkable voyage up the Ottawa across to Lake Huron and back to Quebec by the St. Lawrence. The English in 1629, under Kirke, captured Quebec for the first time, but it was, with all other conquests, again ceded to the French in 1632, from which year the era of French rule in Canada continued until Quebec finally fell before Wolfe in 1759.

In 1748, when the peace of Aix la Chapelle brought to a close the long war of the Austrian Succession, the St. Lawrence and the Great Lakes formed the boundary between French and English in North America. At that time the English settlements were confined to Nova Scotia and to thirteen colonies which stretched along the Atlantic sea coast from New Hampshire to the Spanish provinces of Florida.\* These colonies were settled mainly between 1608 and 1663, and were practically identical with the thirteen original States of the Union after secession. New Hampshire, Massachusetts, Connecticut, and Rhode Island were the four so-called New England colonies, the others were New Jersey, Pennsylvania, New York, Maryland, Delaware, Maryland, Virginia, N. and S. Carolina, and Georgia. In rear of the four New England colonies and between them and Lake Ontario lay the six nation Indians, a very powerful Indian combination whose sympathies, unlike those of other Indians at that time, were pro-British. On the flank of New England lay the French. Behind the remaining colonies and parallel with the Atlantic coast stretched the Alleghany Mountains, their eastern slopes the western limit of civilisation. Behind the Alleghanies lay the wilderness, peopled by savage and hostile Indian tribes.

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\* See Map No. 1



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Indians, is one of the most thrilling episodes in frontier annals.  
Later, he led an expedition against the French at Fort Duquesne  
situated at the junction of the Ohio with the Monongehala River.  
It was of this expedition that Horace Walpole wrote: "The volley  
fired by a young Virginian in the backwoods of America set the world  
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Washington figures largely as a member of the personal staff of that  
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he is much in evidence along the Alleghanies striving to stem the  
tide of French and Indian invasions, until in 1759 after the fall of  
Quebec, he retired to a country life on his estate in Virginia. On  
the Hudson and Lake George Sir William Johnson of Indian fame  
was struggling hard against French and Indian aggressions, while  
Governor Shirley of Massachusetts had a heavy task along the  
Mohawk River, Lake Oneida, and Oswego on Lake Ontario. At  
Beausejour, a strong French place of arms on the Chignecto isthmus,  
between what is now the province of New Brunswick and Nova  
Scotia, the British gained their only signal success during this period.  
This fortress fell before the New England Militia aided by a small  
contingent of regulars in 1755, and so far as military occupation  
went, Nova Scotia passed wholly into British hands. One of the  
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The French were well established along the St. Lawrence and the Great Lakes, with Quebec as their seat of government and Montreal a flourishing town. They had also very considerable settlements about the mouth of the river Mississippi, far away to the south around New Orleans.

#### French settlements

#### French aims and characteristics

The aims and policy of France about this time were very definite. Their ambition was to connect their northern and southern settlements by a long line of forest fortresses down the Wabash, Ohio, and the Mississippi to New Orleans. They sought the friendship and alliance of the western Indians of the hinterland and intrigued also with the tribes of the six nations, their object being to confine British influence entirely to the strip along the Atlantic and, eventually, to circumscribe the English colonies and push the British into the sea. In this policy the French in Canada had the effective support of France. There was a French Governor-General at Quebec, a seigniorial class represented the nobility, and a large proportion of the settlers were either soldiers themselves or the descendants of soldiers. Moreover, all were united in the bonds of a common religion the priests of which were men fired by the traditions of the early Jesuit fathers, the pioneers of exploration in Canada. Thus state and church worked together towards a common end—the expulsion of the English from North America and the whole continent for France and for the faith.

The English on the other hand were devoting themselves principally to colonisation and looked little to the future, while interest in Great Britain

#### The British

regarding her American settlement was comparatively feeble. Although in actual numbers English colonists outnumbered the French by about four to one, the advantage of numbers was to a large extent discounted by the conditions under which the thirteen colonies had come into existence and grown up. Each had begun life on its own account and had grown after its own fashion. In religion they differed widely, e.g., the New England puritan and the quakers and Germans of Pennsylvania. Some were proprietary colonies, others were parts of the Crown and no one colony had any constitutional link with its motherland. For the most part they were jealous of one another, no union was pronounced, and, in one or two cases, actual collisions had occurred. As the rivers of raw material disintegrated and scattered about as they were, they were ill-adapted for effective co-operation. The four New England States were perhaps less disunited than the others, for as before mentioned they had a common and serious danger, the unstable six nations behind them, the French on their flank. It was this long struggling line of mutually jealous states along the sea coast which formed the base for later British action against France. Three things there were which saved them from annihilation—the genius of one man—Pitt, the tie of a common loyalty to Great Britain

realised when almost too late; and British sea power, which, at the same time, gave us North America and made us paramount in India. It will be noticed later how very similar were the conditions that existed in both these countries during and after the Seven Years' War.

Such was the position in 1748. Up to 1756, the year which marked the beginning of the great struggle for colonial empire between France and Great

1748 to 1756.

Britain, there was, *nominally*, peace between the two countries although both in North America and India they were at each others throats. In India a life and death struggle was going on between the British and French East India Companies; in America, the Ohio and the Hudson River, Lake George and Nova Scotia (Beausejour) were the scenes of desperate conflicts between the colonists and the French. It is at this time we first hear the name of George Washington, at the age of twenty-one a major in the colonial service and Adjutant-General of the Virginia Militia: his march through the wilderness, up the Potomac River and across the western hinterland to the French fort of Le Bœuf a few miles south of Lake Erie, with a following of half a dozen whites and as many Indians, is one of the most thrilling episodes in frontier annals. Later, he led an expedition against the French at Fort Duquesne situated at the junction of the Ohio with the Monongehala River. It was of this expedition that Horace Walpole wrote: "The volley fired by a young Virginian in the backwoods of America set the world on fire." This was in 1754. In the following year Braddock's ill-fated expedition took place against Duquesne and here again Washington figures largely as a member of the personal staff of that unfortunate general. Thereafter with a scanty following of Colonials he is much in evidence along the Alleghanies striving to stem the tide of French and Indian invasions, until in 1759 after the fall of Quebec, he retired to a country life on his estate in Virginia. On the Hudson and Lake George Sir William Johnson of Indian fame was struggling hard against French and Indian aggressions, while Governor Shirley of Massachusetts had a heavy task along the Mohawk River, Lake Oneida, and Oswego on Lake Ontario. At Beausejour, a strong French place of arms on the Chignecto isthmus, between what is now the province of New Brunswick and Nova Scotia, the British gained their only signal success during this period. This fortress fell before the New England Militia aided by a small contingent of regulars in 1755, and so far as military occupation went, Nova Scotia passed wholly into British hands. One of the most curious features of this time in North America was the continued apathy of the Colonials. The

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want of interest showed in Great Britain might perhaps have been due to distance and to scanty news of what was actually going on, but in America itself, with war at the very doors of the colonies, it is very difficult to understand. The policy of the French, as before noted, was definite and deter-



by the return of the waters of the sea when the east wind died down. In the year 700 (B.C.), as is recorded by Isaiah, Sennacherib, King of Assyria, marched a great army through Palestine to attack Egypt. The Jews hastily made peace with the invader, and the Assyrians passed on towards Egypt; but after a time Sennacherib doubted the wisdom of leaving a fortified town like Jerusalem in his rear and turned back to destroy it. Of this great army nothing further was ever heard, and its destruction on the frontier between Palestine and Egypt, though a still unexplained catastrophe is supposed to have been caused by the smoor.

Similarly the great Alexander's failure to complete the conquest of this country was due to the fact that his troops, who crossed the Indus above Attock in the spring of 327 (B.C.), were worn out by the heat of the Punjab summer, and their spirit was broken by the hurricanes and the rain of the subsequent south-west monsoon.

These incidents are, however, only valuable as showing the actual influence of climatic conditions on some of the most important military enterprises of the past, as obviously we know too little about the expeditions individually, and too little of the "Intelligence Branches" possessed by the ancients, to say whether the recorded failures were due to want of knowledge or to want of care.

In more recent times there are, however, well-authenticated examples of expeditions which have succeeded owing to anticipatory study of the weather over the area in which the operations were to be undertaken, or have failed owing to the neglect of this study.

One of the most remarkable, if rather hackneyed instances of the overthrow of an army by the weather, is that afforded by Napoleon's invasion of Russia. The great Emperor entered Russia on the 27th June 1812. On the 29th June a storm of great violence broke over the army, followed by five days of exceedingly heavy rain. The roads immediately became almost impassable. Napoleon had not calculated on this rainfall, and his supply of horses had been estimated on the basis of continued fine weather, so that, as soon as the rains became water-logged, a heavy wastage of horses occurred, and the mobility of the army from this time was seriously crippled. The results were so serious as thoroughly to disorganize the vast train of supplies and the practical failure of the expedition commenced from this date. In thus calculating on steady fine weather, Napoleon must have been misled, or have failed to make enquiries as to the prevailing climatic conditions over the region between the Polish frontier and the Russian capital. The wettest period of the year in this locality is the end of June, the month of July, and the beginning of August, and the heavy rains experienced by Napoleon, though ascribed by him to bad luck, were in reality not exceptional and should not have been unexpected.

Napoleon reached Moscow early in September and on the 15th the conflagration commenced which rendered the continued occupation of the town impracticable. Napoleon, however, delayed his retirement for five weeks and then complained of the Russian

winter. On the 17th October leather and linen were issued to the French troops, but it was then too late to make shoes and shirts, and there was no attempt made to provide the soldiers with warm clothing or gloves, so that the army started on its retirement with the same clothing the men had worn during their advance in summer. The retreat commenced on the 18th October in beautiful weather, and on the 27th October Napoleon announced, in his *bulletin* of that date that fine weather would continue for eight days longer, by which date the army would be in their new quarters. Oddly enough, Napoleon's reputation as a weather prophet never having been recognised, the meteorological portion of the forecast was fulfilled, whilst the military portion failed completely. Not a man of the Moscow army had reached Smolensk when the winter began in earnest. The whole earth was covered with a white pall, and immediately it became impossible to procure the scantiest food. During November and December the troops struggled on towards the frontier, undergoing frightful miseries.

The number of troops which entered Russia was 630,058 and of these only about 60,000 returned. Historians say "that Napoleon was beaten before the first snowflake fell." This is no doubt true as regards the success of his expedition, but the greater part of the army might have returned and wintered at Wilna had the winter been properly anticipated. His overwhelming disasters, which deprived him permanently of half a million of soldiers, arose from ignoring the approach of winter, and by this he lost scores of thousands of men unnecessarily.

Another, but less striking instance of a military calamity, resulting from neglect of the weather, is afforded by our own carelessness and ignorance during the course of the Crimean campaign. The entire stock of food, corn, and hay, provided by the commissariat for a couple of months for the English army, was stowed away in sailing vessels which were ordered to lie outside Balaclava Harbour, though it was known they had to ride at anchor on a rocky bottom with a terrible coast all round the Bay: and the instructions were given although it was notorious that the place was subject in the autumn to violent storms of wind. A hurricane arose on the night of the 14th-15th November 1854, and the whole of these ships were lost with all the food and clothing of the soldiers, and provender for the horses. Lord Wolseley in his "Story" mentions that even when he arrived, a month later, the whole coast on each side of the entrance was a mass of wreckage—the result of the great and disastrous storm of the 15th. Largely as a result of this storm, or rather as a result of this carelessness and ignorance regarding the possible weather, Lord Wolseley says that the soldiers "during the winter (1854-55) often lived on offal and garbage" and our starved and overworked troops were rather in the position of the besieged than of the besiegers.

As regards this storm, it was subsequently evident from a mere cursory study, especially of its rate and direction of movement, that

timely notice of its approach might have been issued to the French and English commanders and the immense damage to the allied fleets and transports might have been mitigated, if not altogether avoided.

If this was too much to expect in those early days of telegraphy and meteorology, it may be mentioned that Dr. Russell, the celebrated *Times* war correspondent, states that a warning of what might happen was given on Friday, November 10th, 1854, when a similar but slighter gale was experienced. The wind on that occasion set right into the bay and raised a high sea, which was only ridden out by the vessels at anchor owing to the fact that they were not sailing vessels, but were able to steam ahead against wind and sea. This particular gale soon moderated, but the warning was disregarded, and the luckless sailing transports which subsequently arrived were ordered or allowed to remain outside until the hurricane of the 14th-15th rushed down on them, carried them in, and wrecked them on the rock-bound coast. (*Weather and Warfare*, W. H. Dallas, Esq., Journal of the U. S. I. of India, Vol. XXXIII, 1904.)

Out of 24,000 British who perished in the Crimea, only 4,000 were wounded: the remainder died of cholera and other diseases brought on by hardship and exposure, and no small proportion of deaths was due to neglect.

In Cuba, in the war of 1898, about 600 United States soldiers died of wounds, but some 6,000 or more of disease, and a large proportion of these deaths were due to defective medical and sanitary arrangements. This is how Mr. Atkins describes the condition of the Army Medical Corps and the weather. Speaking of the night after the fighting of 3rd July, he says:—

“There were not nearly enough tents, cots, medicines, doctors, nurses or carriers. Everything was insufficient. I have never seen anything more pitiable than the spectacle of wounded men lying all night without a tent-covering over them on the muddy ground and in the soaking dew. Night on a hospital ground was a night of horror: there was moaning everywhere, and one night I remember two men calling all night for some one to kill them.”

Of another night, over a week later, he says:—

“A thunderstorm came—such thunder as I have never heard and never thought to hear—so near, tremendous and splitting. With it came a tropical storm of rain, falling in a wall so that you could not see through it. Soon the ground where I lay was under water. A volunteer regiment had arrived late at night, and had no time to encamp themselves: the morning revealed them lying in a lake. The horses were all frightened with the storm, and came round the tents whinnying. And in the middle of it all, two men who had been crying out deliriously in the ‘hospital’ began to wander about in the field gibbering. This was a hospital in which there were cases of yellow fever.”

I have tabulated for you some examples from ancient and modern times, but having demonstrated to you what an important

factor every variety of climatic phenomena has been in war, the point I wish to make is that mortality varies directly with the excellence or otherwise of our hygienic arrangements. I will only ask you to consider two contrasts of good and bad *bandobusts* in this direction. In the Ashanti War of 1854 the whole army melted away. Those who did not die were invalided. In Ashanti in 1873, Sir Garnet Wolseley, by provision and the aid of good doctors, as Mr. Justin McCarthy puts it in his *Short History of Our Own Times*, snatched victory "out of the very jaws of approaching sun and fever."

The second contrast is the rapid march of Manteuffel's two army corps with 178 guns over snow-clad mountains between Dijon and Langres between January 13th and 16th, 1871, when the Germans had no unusual sickness, whilst their opponents, Bourbaki's army, without any rapid marches and in a fertile plain, became so demoralised by sickness that 133,000 men fled across the Swiss border and so became interned in neutral country.

Colonel Hozier, in his *Franco-German War*, gives the following description of them on their arrival in Switzerland:—

"Their clothes were rent, and dropping off them in tatters; their feet and hands were frost-bitten. While the shrunk features and crouching gait told of gnawing hunger, the deep cough and hoarse voice bore witness to long nights spent on snow and frozen ground. Some had bits of wood under their bare feet to protect them from stones: others wore wooden sabots, hundreds had merely thin cotton socks, and many none at all: others who appeared well shod would show a boot without sole or heel—the exposed part of the foot, once frozen, now presenting a wound crusted with dirt. For weeks none had washed or changed their clothes, or put off their boots. Their hands were blacker than any African's. Some had lost their toes: the limbs of others were so frozen that every movement was agony. The men stated that for three days they had neither food nor fodder served out to them, and that even prior to that period of absolute famine one loaf was often shared between eight of them."

The last contrast is the more or less familiar experiences of a European and an Oriental army in Manchuria.

The reports of our attachés indicate the elaborate sanitary precautions which were undertaken by the Japanese and the utter absence of any sanitary arrangements in the lines of their antagonists.

The results were sufficiently obvious. In the Russian Army the proportion of sick to wounded was one man to 4·8 admissions for disease, whereas in the Japanese Army the proportion was one to 1·5 or nearly four times as good.

Climates and its effects are, I have ventured to insist, pre-eminently the study of soldiers of a world-wide empire, but the point, gentlemen, I have tried—I hope successfully—to make before you to-day is that nowadays every war is a doctor's war and that the climate

remaining the same the success or failure of your military operations must depend on the hygienic measures you adopt. Sound sanitation, I submit, is even more important than *Weather in War*.

THE CHAIRMAN: Ladies and Gentlemen,—We have heard several specific instances quoted in Major Blackham's interesting lecture which show how military operations may be made or marred by weather; but the whole history of war teaches the same lesson, and the account of almost any campaign of which we have a detailed record preaches an eloquent sermon on the same text.

Since I was asked to take the Chair I have been looking up the subject, and there are one or two interesting examples which I see he has not quoted. At the Shipka the 24th Division of the Russian army lost 6,000 men during the storm of 18th to 23rd December 1877: Gourko lost 2,000 men frozen to death during the same storm.

In the Madagascar campaign of 1894-95, out of 15,000 men, the French lost 6,000, only 21 of whom died of wounds.

The appalling effects of a tropical sun on European troops exhausted by long marches, and with a scanty supply of water, fighting in the middle of the day in unsuitable clothing and without proper head protection, are admirably illustrated by the recently published graphic account by Mr. Forrest of the hot weather campaign conducted by Sir Hugh Rose in the last phase of the mutiny, which I saw mentioned in the *Pioneer* only a couple of days ago. In the fight at Koonch, we are told, "while the action was going on, dhooly after dhooly was brought into the field hospital with officers and men suffering from sun stroke, some dead, others prostrated, laughing and sobbing in weak delirium". Three days after the action, Sir Hugh Rose wrote, "We should have destroyed the enemy, had not the dreadful heat paralysed the men. I was obliged four times to get off my horse from excessive debility".

The rebel commander so fully recognised the condition of our troops, that he issued the following General Order:—"As the European infidels either died or had to go into hospital from fighting in the sun, they are never to be attacked before ten o'clock in the day." At Kalpi, we read "the prostration of the whole force had become a matter of arithmetical calculation. So many hours laid low so many men". Again Sir Hugh Rose writes:—"Out of 36 men of the 14th Light Dragoons, forming part of our forage escort, 17 were brought back to camp after only two hours' exposure to the sun". The senior surgeon reports "We have now 310 Europeans in hospital, having lost in the week 21 by sun stroke; and there is scarcely an officer on the staff fit for duty". In the fighting before Gwalior we are told "In one European regiment of infantry 5 officers and 81 men were struck down by the sun in a single day. In another regiment 100 men were disabled from the same cause". In an action before Lucknow in 1858 after three hours hard combat, the enemy finally gave way, leaving 6 guns and

about 600 dead on the field. The British loss in killed and wounded was 67, and in addition 33 men died from sun stroke and 250 were taken into hospital. The men fell asleep in their tents and never awoke—apoplexy, resulting from exposure to the sun, being the immediate cause of death.

Year by year, as the science of medicine progresses, we gain fresh knowledge with regard to the causation of so-called climatic diseases, and each fresh step teaches us that those ailments which we once thought to be the inevitable consequences of living under certain meteorological conditions are after all entirely preventable.

Warm clothing and suitable food have robbed a residence in an Arctic climate of all its terrors, and the members of the recent expeditions to the poles maintained their health and vigour in spite of strenuous exertions, and returned to their homes as fit or fitter than they were when they left them.

I need only refer to the statistics showing the remarkable improvement in the health of our army in India to show how modern knowledge has helped us to fight against the scourges which at one time decimated our troops in tropical climates.

We must not, however, forget that while it is possible to attain these desirable results in times of peace and among civilised communities, an army in the field lives under more or less savage conditions; and, in these circumstances, special precautions must be taken to prevent the reappearance and spread of such diseases as cholera, enteric, typhus fever, scurvy, small-pox, and dysentery, which are now practically unknown in our barracks and cantonments. These diseases must be carefully guarded against in war, and it is essential that regimental officers should know how they are caused and how they are spread to enable them to work sympathetically hand in hand and in an intelligent manner with the medical authorities in keeping the men under their command fit to march and fight. On service a sick man is not only useless—he is a nuisance and an incumbrance; and no commander is in a position to make the best use of his force if he is hampered by the presence of more sick and wounded than he can rapidly get rid of down the lines of communication.

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## THE DOMINION OF CANADA.

BY LIEUT.-COLONEL P. G. TWINING, M.V.O., R.E.

### I.—HISTORICAL.

The very early history of Canada is full of interest, but the limits of this paper do not permit a reference to any but a few of the more salient dates.

#### **Early History.**

In 1497 North America was discovered by the Cabots. The first actual landing on Canadian soil was made by Jacques Cartier of St. Malo, in France, who took formal possession of the regions around the St. Lawrence estuary in the name of his royal master in 1534. No attempt at French colonisation was, however, made until 1608, when Champlain with a few French settlers wintered at Quebec and established there the seat of French rule in North America. In 1615 Champlain made a remarkable voyage up the Ottawa across to Lake Huron and back to Quebec by the St. Lawrence. The English in 1629, under Kirke, captured Quebec for the first time, but it was, with all other conquests, again ceded to the French in 1632, from which year the era of French rule in Canada continued until Quebec finally fell before Wolfe in 1759.

In 1748, when the peace of Aix la Chapelle brought to a close the long war of the Austrian Succession, the St. Lawrence and the Great Lakes formed the boundary between French and English

#### **Position of English and French in 1748.**

in North America. At that time the English settlements were confined to Nova Scotia and to thirteen colonies which stretched along the Atlantic sea coast from New Hampshire to the Spanish provinces of Florida.\* These colonies were settled mainly between 1608 and 1663, and were practically identical with the thirteen original States of the Union after secession. New Hampshire, Massachusetts, Connecticut, and Rhode Island were the four so-called New England colonies, the others were New Jersey, Pennsylvania, New York, Maryland, Delaware, Maryland, Virginia, N. and S. Carolina, and Georgia. In rear of the four New England colonies and between them and Lake Ontario lay the six nation Indians, a very powerful Indian combination whose sympathies, unlike those of other Indians at that time, were pro-British. On the flank of New England lay the French. Behind the remaining colonies and parallel with the Atlantic coast stretched the Alleghany Mountains, their eastern slopes the western limit of civilisation. Behind the Alleghanies lay the wilderness, peopled by savage and hostile Indian tribes.

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\* See Map No. 1.



The French were well established along the St. Lawrence and the Great Lakes, with Quebec as their seat of government and Montreal a flourishing town. They had also very considerable settlements about the mouth of the river Mississippi, far away to the south around New Orleans.

**French settlements.** The aims and policy of France about this time were very definite. Their ambition was to connect their northern and southern settlements by a long line of forest fortresses down the Wabash, Ohio, and the Mississippi to New Orleans. They sought the friendship and alliance of the western Indians of the hinterland and intrigued also with the tribes of the six nations, their object being to confine British influence entirely to the strip along the Atlantic and, eventually, to circumscribe the English colonies and push the British into the sea. In this policy the French in Canada had the effective support of France. There was a French Governor-General at Quebec, a seigneurial class represented the nobility, and a large proportion of the settlers were either soldiers themselves or the descendants of soldiers. Moreover, all were united in the bonds of a common religion the priests of which were men fired by the traditions of the early Jesuit fathers, the pioneers of exploration in Canada. Thus state and church worked together towards a common end—the expulsion of the English from North America and the whole continent for France and for the faith.

**French aims and characteristics.** The English on the other hand were devoting themselves principally to colonisation and looked little to the future, while interest in Great Britain regarding her American settlement was comparatively feeble. Although in actual numbers English colonists outnumbered the French by about four to one, the advantage of numbers was to a large extent discounted by the conditions under which the thirteen colonies had come into existence and grown up. Each had begun life on its own account and had grown after its own fashion. In religion they differed widely—*e.g.*, the New England puritan and the quakers and Germans of Pennsylvania. Some were proprietary colonies, others were fiefs of the Crown, and no one colony had any constitutional link with its neighbour. For the most part they were jealous one of the other, aversion was pronounced, and, in one or two cases, actual collisions had occurred. All had levies of raw militia, but, disintegrated and self-absorbed as they were, they were ill-adapted for effective combination. The four New England States were perhaps less disunited than the others, for, as before mentioned, they had a common and ever-present danger—the unstable six nations behind them, the French on their flank. It was this long straggling line of mutually antagonistic States along the sea coast which formed the base for later British action against France. Three things there were which saved them from annihilation:—the genius of one man—Pitt; the tie of a common loyalty to Great Britain,

realised when almost too late; and British sea power, which, at the same time, gave us North America and made us paramount in India. It will be noticed later how very similar were the conditions that existed in both these countries during and after the Seven Years' War.

Such was the position in 1748. Up to 1756, the year which marked the beginning of the great struggle for colonial empire between France and Great

1748 to 1756.

Britain, there was, *nominally*, peace between the two countries although both in North America and India they were at each others throats. In India a life and death struggle was going on between the British and French East India Companies; in America, the Ohio and the Hudson River, Lake George and Nova Scotia (Beausejour) were the scenes of desperate conflicts between the colonists and the French. It is at this time we first hear the name of George Washington, at the age of twenty-one a major in the colonial service and Adjutant-General of the Virginia Militia; his march through the wilderness, up the Potomac River and across the western hinterland to the French fort of Le Bœuf a few miles south of Lake Erie, with a following of half a dozen whites and as many Indians, is one of the most thrilling episodes in frontier annals. Later, he led an expedition against the French at Fort Duquesne situated at the junction of the Ohio with the Monongehala River. It was of this expedition that Horace Walpole wrote: "The volley fired by a young Virginian in the backwoods of America set the world on fire." This was in 1754. In the following year Braddock's ill-fated expedition took place against Duquesne and here again Washington figures largely as a member of the personal staff of that unfortunate general. Thereafter with a scanty following of Colonials he is much in evidence along the Alleghanies striving to stem the tide of French and Indian invasions, until in 1759 after the fall of Quebec, he retired to a country life on his estate in Virginia. On the Hudson and Lake George Sir William Johnson of Indian fame was struggling hard against French and Indian aggressions, while Governor Shirley of Massachusetts had a heavy task along the Mohawk River, Lake Oneida, and Oswego on Lake Ontario. At Beausejour, a strong French place of arms on the Chignecto isthmus, between what is now the province of New Brunswick and Nova Scotia, the British gained their only signal success during this period. This fortress fell before the New England Militia aided by a small contingent of regulars in 1755, and so far as military occupation went, Nova Scotia passed wholly into British hands. One of the most curious features of this time in North America was the continued apathy of the Colonials. The

Colonial apathy.

want of interest showed in Great Britain might perhaps have been due to distance and to scanty news of what was actually going on, but in America itself, with war at the very doors of the colonies, it is very difficult to understand. The policy of the French, as before noted, was definite and deter-

mined, but instead of straining every nerve to prevail against their enemy the separate colonies were still concerned almost wholly with domestic affairs. The frontier seemed scarcely to engage their attention and this in spite of the fact that the French menace gathered strength every day that passed. It remained for the genius of one man to arouse both Briton and Colonial to a true sense of their danger and their duty. Once roused the result was scarcely ever in doubt.

Throughout the whole of the fighting that took place up to and after this period in North America  
**Two great military highways between America and Canada.** two great military highways between America and Canada come specially into prominence.\* British, French, Indians, Americans, and rebel leaders used them alike, and there is perhaps no other locality which has seen so many and such bloody conflicts. At Albany on the Hudson, roughly 150 miles north, and now the capital, of New York State, the Mohawk and the Hudson rivers join. To the north there is a continuous waterway through Lake George, Lake Champlain, and the Richilieu to Sorel on the St. Lawrence below Montreal. To the west another waterway *via* the Mohawk River, Lake Oneida, and the Oswego leads to Lake Ontario at Oswego, now a flourishing city, in 1750 a stockaded fort. Along the Champlain route were Forts Edward on the Hudson, William Henry at the foot of Lake George, Ticonderoga at the head of the same lake, Crown Point at the south end of Lake Champlain, and St. Johns, Chambly, and Sorel on the Richilieu. On the western route were Forts Stanwix, Craven, William, and Bull. In the triangle between the two water routes lie the Adirondack mountains, the base of the triangle being that part of the St. Lawrence and the southern shore of Lake Ontario between Sorel and Oswego. Forest wilderness has given way to cultivation farm and homestead, bush roads to railways, canoes and bateaux to splendidly equipped river steamers, and rapids have been turned by masonry canals; but, even so, nothing can ever quite kill the romance with which the heroic period of its history has invested this part of the North American continent.

In 1756 began that memorable struggle for empire between France and Great Britain, known as the  
**Seven Years' War, 1756-1763.** Seven Years' War. At this time England was neither fortunate in her rulers nor well prepared for war. Her navy was strong but her army was very much reduced in numbers while her generals were men of the most moderate capacity. Newcastle, the Prime Minister, was a man with neither high aims nor a wide outlook upon public affairs, and Robinson, at that time in charge of the colonies, was of even less account than his chief. During the first two years of the war Anglo-Saxon fortunes in America had reached the lowest ebb. The forts of Oswego and William Henry had been captured and destroyed, Louisburg, the great French stronghold in the North Atlantic, on the Cape Breton coast, was

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\* See Map No. 2.

active and defiant, the colonists were thoroughly disheartened, and along the frontiers of the southern colonies French and Indians were everywhere triumphant despite the gallant effort of Washington to stem the tide of aggression. British power in North America seemed shaken to its foundation, the hour was at hand—with it came the man. It was in 1758 that Pitt found himself at last able to devote his splendid abilities to the salvation of our empire beyond the seas. Leaving all the smaller details of government to Newcastle, who revelled in such matters, he turned his whole attention to affairs in which the honour and safety of the empire were involved. Riding roughshod over considerations of privilege, family interest, and seniority, his sole idea was to render France harmless to Great Britain in Europe, to drive her entirely out of the western hemisphere, to take from her every bit of territory which she owned or claimed beyond the seas, and generally to crush, humiliate, and disarm her. Using all the gifts of his wonderful eloquence he inspired the whole nation with his own views, to the extent that in the words of a historian of the time, "Every man whether English or Colonial whom he called to serve him went forth into the camp or the wilderness with an enthusiasm for his chief and for his country and with a sense of exhilaration that for long years had been almost wholly lacking." There was little new in his plans, what *was* new was the spirit which animated them and the men selected to carry them out. Ticonderoga, Duquesne and Louisburg were to be the first objectives, after that Quebec. Amherst, Wolfe, (with Guy Carleton, afterwards Lord Dorchester, as a member of his staff), and Forbes were the three most noteworthy names among the selected generals, and well did they do their work. At sea Boscawen was the chosen instrument. Louisburg fell on the 27th July 1758. Frontenac, on Lake Ontario, surrendered to Bradstreet soon after. Duquesne was reduced by Forbes in November, but Abercrombey was less successful in front of Ticonderoga. He was recalled late in 1758 and Amherst then became commander-in-chief in America. For 1759 Pitt's plans were Wolfe, aided by a fleet, to reduce Quebec, Amherst to push through from the south by the Champlain route, and Prideaux to assail Niagara. By the 28th of June Wolfe was before Quebec; on September 13th it fell before him. In the meantime Amherst had captured Ticonderoga, and Niagara had passed into Prideaux' hands, while Stanwix had occupied every French fort as far as Presqu'il on the shore of Lake Erie. The following year saw Amherst in front of Montreal, the capitulation of Vandreuil, and the end of French dominion in Canada. By the

#### **Treaty of Paris, 1763.**

terms of the Treaty of Paris which was signed in 1763 Great Britain received all North America east of the Mississippi that had been owned or claimed by France, while, from Spain, Florida was taken in exchange for Havanna. France was allowed the right to trade on the Mississippi, she retained certain of the West India Islands, fishing rights on the Newfoundland coasts, and the islands of St. Pierre and Miquelon,

which she still holds. Thus French power disappeared altogether from North America. These seven years in India also, terminated the contest between France and Great Britain in that country. The underlying causes of British success have already been noted. The whole energy of our people wielded by Pitt—the real awakening of loyalty—and sea power. From the conclusion of this war onward Britain had only to struggle in India with the native powers, in Canada with her own people.

The Canada of 1763 was represented chiefly by a strip along both banks of the St. Lawrence from about 100 miles below Quebec up to Montreal.

**1763–1814,**

West of Montreal and north of Lakes Ontario and Erie, as far as Huron, was practically forest primeval until some twenty years later, when the U. E. loyalists poured into this district from south of the border and the province of Upper Canada came into being. Frontenac (Kingston), Niagara, and Detroit were almost the only settlements in what was at that time a wilderness and is now the garden of Ontario. Beyond Erie and Huron was a trackless waste of forest given up to the Indian tribes with only an occasional post held by French traders and a few French soldiers. This district became almost immediately after 1763 the scene of a great Indian war in which Western and Northern Indians under their great leader Pontiac struggled for three years in vain endeavour against the English. Pontiac's final defeat and death occurred in 1766 and put an end for ever to the idea of Indian sovereignty. Later this part of the west became the States of Michigan, Ohio, and Wisconsin.

After the conclusion of the Treaty of Paris, Murray took over the government of Canada, but was followed in 1766 by Carleton with whom lay the task of dealing with the French inhabitants of Quebec, now clamouring for a settlement in respect of their laws and religion. The Quebec Act of 1774 adopted the civil law of France and the criminal law of England, fixed boundaries for the province, established a legislature, and guaranteed tithes to the clergy. It was passed in the face of much opposition at home, and in spite of rigorous protest from certain of the American colonies, and, while its enactment undoubtedly bound the French more closely to us in Canada, it did much to alienate from us the sympathies of the colonists. When Massachusetts, the centre of agitation, was placed under a British governor and the port of Boston closed, discontent over the Quebec Act, together with resentment at the closing of this port, came to a head, and the gauge of battle was thrown down by the Atlantic States.

But, in point of fact, war between England and her colonies resulted from no specific act or enactment, for the seeds of an eventual rupture with Great Britain were contained in the conditions under which the British settlements along the Atlantic had come into being and grown. Distance from the mother country

**Real causes of the War of Independence, 1775–1783.**

and the fact of having in every way to fend for themselves begat in every State, from the beginning, a spirit of sturdy independence, while the labour and hardship involved in breaking new ground, and the desperate struggle for existence in a new country, under strange conditions and with a savage enemy always at the gates, forced upon each separate community the necessity for directing its internal affairs in the way best suited to local conditions. Hence arose the idea of state rights which even at the present time in America is so difficult to reconcile with direction by an established Federal Government. When, from a distance, Great Britain made the attempt to direct and govern, with little expert knowledge and through instruments not always well or wisely chosen, there could in the nature of things be but one outcome. Pitt was perhaps the only man in England who thoroughly realised the delicate nature of the tie between the colonies and the mother country, but his warnings were for the most part unheeded—discontent with Great Britain gathered strength, then came rebellion and, finally, war.

Hostilities opened in May 1775 with the seizure by Allen and Arnold of Ticonderoga and Crown Point on Lake Champlain, and it was not until six

**Opening of the war.**

years later that the surrender of Cornwallis at Yorktown brought the long struggle for American independence to a close. With the details of that struggle we have no concern here except as regards the invasion of Canada by the Americans in 1775—a noteworthy incident in Canadian history—not alone because Quebec almost slipped from our grasp but also on account of the fact that, for the first time, British troops and French Canadian volunteers fought side by side for the preservation of their common country.

The Americans entered Canada at two points. One column led by Montgomery came up the Champlain route

**Invasions of Canada by Montgomery and Arnold.**

with Montreal as its objective. Another, with Arnold in command, chose an entirely new road by the Kenebec river from about where Portland, Maine, now stands, to Augusta in Maine; thence by a succession of lake and river ways across the watershed to the head of the Chaudiere river; then down that river to Quebec. This route lay through an unknown wilderness of forest, rock, and swamp, the time of year was autumn, and the season was abnormally cold. Of the force that started, many succumbed to the hardships and privations of the march, but the greater part reached the St. Lawrence, crossed the river, sat down in front of Quebec, and demanded the surrender of the city. Arnold, however, quickly realised that his riflemen were powerless against its defences and soon marched off to await the advent of Montgomery, who in the meantime had successfully occupied Montreal. It is probably not generally realised that the Americans in 1775-76 were in actual occupation there from November until May. Carleton had been in Montreal just before Montgomery appeared before the city, but, considering Quebec to be of much greater importance, had

slipped off down the river and just escaped capture. Lucky for England was it that he did so, for there is little doubt that had it not been for his personal influence, energy, resource, and determination Quebec would certainly have fallen. As it was his task was most difficult, the city was in a state of siege for five months, and it was in reality only the timely arrival of British transports which finally turned the scale in our favour.

Montgomery had been killed in front of Quebec, but Arnold was still very active, and, with the coming of reinforcements from England, Carleton took the field, defeated him at St. Foye outside the city walls, chased him south as far as Ticonderoga and, as the season was getting on towards late autumn, then retired to winter quarters in the capital. Through the personal spite of Germaine, then principal Minister of State to George III, the chief command was soon afterwards given to Burgoyne whose ill-fated expedition and subsequent surrender on the Hudson are well known. In 1778 Haldimand was appointed Governor and, after eleven years spent in Canada, Carleton returned to England to come back again a few years later and put the coping stone on the splendid work he had done for Great Britain in North America.

Before leaving the subject of the war it may be as well to say a word about Western Canada. In Carleton's time the great North-West lay entirely outside the vision either of settler or politician. Niagara, Detroit, the ports on the Ohio River and in the country south of and around Lakes Erie and Michigan, represented for all practical purposes our westernmost limits in North America. These localities during and after the war were scenes of much fighting between English, French, and Indians until finally Canada withdrew behind the lakes, and later Ohio, Michigan, Illinois, and Wisconsin came into being as States of the American Union. As regards boundaries the Treaty of Paris, which in 1783 gave America her independence, was entirely inconclusive.

#### **Boundaries, 1783.**

This is however a subject which will be referred to again later.

In the spring of 1782 Carleton was sent to New York to succeed Clinton as Commander-in-Chief, and the two years that followed are memorable in Canadian history on account of the enormous influx into Canada of loyalist refugees from America against whom, whether combatant or non-combatant, confiscation and deprivation of all real and personal property had been decreed, and was being rigorously enforced, by each one of the thirteen States of the Union. Carleton's view of the conditions under which the British were to evacuate New York were that not a soldier should leave until the last loyalist who claimed his protection had been sent safely out of the country, and it was not until the end of 1783 that the exodus was completed and the military evacuation began. The British Government, urged thereto by Carleton, behaved with

**Influx of the United Empire Loyalists into Canada.**

commendable generosity to the refugees. Free grants of land in Canada, free transportation, implements and provisions in their new country for two years, pensions to officers and to the widows of civil and military officials, with about three and a half millions in money compensation for actual losses, were items in the bill paid by Great Britain on account of those who had stood by or sympathised with her during the war.

Nova Scotia, Cape Breton, Prince Edward Island and what is now the province of New Brunswick received about 30,000 men, women, and children and, when it is considered that the population of all these provinces previous to the coming of the United Empire loyalists, was only about 14,000 and these for the most part French, Swiss, and German, the effect upon the country of an influx such as this of loyal subjects of the Crown can easily be understood. It was, in point of fact, the real British settlement of the Maritime Provinces.

In the Canadas, the present eastern townships south of Quebec and on the borders of Vermont, the neighbourhood of Kingston, and the Bay of Quinte on Lake Ontario, the Niagara peninsula, and the banks of the St. Clair river were the localities where, immediately after the war, about 12,000 United Empire loyalists settled. Emigration to this part of the country continued however well up to 1790 and there is now both in Ontario and the Maritime Provinces a very strong backbone of the descendants of the old loyalist settlers. The early days of these people in Canada were full of hardship and suffering. The districts in which they settled were entirely virgin country out of which they had to hew their homes and their living, for many years the struggle for existence was very severe and almost all had left farms and comfortable homes behind them. As in Nova Scotia, this was the first real British settlement of the Canadas, and the one man to whom it was all due was Carleton. He saved Quebec for England during the war, and settled Canada for England when the war was over. Later he was to come back as Lord Dorchester, once again to govern the country he had made. In all our history no one individual stands out so prominently a great Imperialist as this man.

The years following the Treaty of Paris up to the outbreak of war with America in 1812 are principally marked in Canadian history by the continued settlement and development of the country. The Canada Act of 1791 under which the two provinces of Upper and Lower Canada, practically the Ontario and Quebec of to-day, came into being, the final disappearance of Dorchester from the country with which he had been so closely and so honourably connected for forty years, the great extension westward to the Pacific of the two great fur trading companies, and the steady growth in the United



States of antagonistic feeling towards Britain and Canada, are all noteworthy events of this period. Canada was still to be involved in one more war, a war too that was to be protracted and bloody ; thereafter she was to pursue her career as a nation in peace, free to devote herself entirely to her internal development.

The ostensible causes of this war which was declared by America against Great Britain in 1812 were—

**War of 1812—14.**

- (1) The right of search exercised by Great Britain on the high seas.
- (2) The "Orders in Council" and the consequent interference with trade.
- (3) The alleged incitement by Great Britain of the Western Indians.

But the real causes were the sympathy of the South with Napoleon, the anti-British sentiments of the Southerners, and the delusion, under which the South laboured, that Canada was not only willing but ready to rise as one man against British authority.

The frontier of Canada at this time was, for purposes of offence, roughly from Lake Champlain to the St. Lawrence, then down that river and through the Great Lakes to the foot of Lake Huron—some 700 miles—and the American plan of action was an advance by the old Champlain route on Montreal, with a central and a western attack directed respectively against Niagara and Detroit.

Further reference to the results of, and the lessons to be learnt from, the war will be made later. It will be sufficient to say here that in 1812 the American advance upon Montreal was driven back to Lake Champlain, the attack upon Niagara was defeated by General Brock, and Detroit with the Michigan territory passed into British hands. In 1813 Lake Ontario, during the first part of the year, fell under American control, then passed again into the hands of Sir James Yeo, British Commodore of the Lakes, while on Lake Erie America gained complete ascendancy. But at the close of the year, the Americans had signally failed to occupy permanently any part of Canadian territory except Amherstburg in the west. In 1814 the American attack was largely against the centre of the Canadian frontier between Niagara and Kingston on Lake Ontario, although an advance was also planned against Montreal and Lower Canada from Lake Champlain. On the British side an offensive movement was directed against the northern part of New York State and an expedition sailed from Halifax for the coast of Maine while another combined military and naval force was launched against Washington. This latter force was entirely successful. Hostilities were brought to a close by the Treaty of Ghent in December 1814, one clause of which left the territory of both belligerents exactly as it stood in 1812, the actual course of the boundary line of 1783 being left to be determined subsequently by a commissioner appointed by the two nations. And so closed Canada's last great struggle with forces outside her own borders. The years that followed 1815, up to the

present day, were to be marked by many stirring incidents, but not again in her history was she to be called upon to defend her frontiers against an invader.

The outbreak of rebellion in Upper and Lower Canada in 1837

1837 to 1812.

led to the union of these two provinces, under the name of "the Province of Canada" four years later and, in 1867, Canada, Nova Scotia, and New Brunswick became united as "the Dominion of Canada" with a central legislative and provincial parliaments at the headquarters of each province. Manitoba joined the Dominion in 1870, British Columbia in 1871, Prince Edward Island in 1873, and in 1875 the North-West Territories and Rupert's Land were separated from Manitoba and placed under a Lieutenant-Governor. In 1848 the St. Lawrence canals had been opened for navigation, and in 1856 the Grand Trunk Railway became an accomplished fact. 1876 saw the opening of the Intercolonial Railway between Halifax, on the Atlantic, and Quebec; 1879 was marked by the inauguration of the national policy—a protective tariff against outsiders. The Canadian Pacific Railway, begun in 1881, was completed in 1885, the same year that was marked by a rising in the North-West Territories under Louis Riel, a half breed, supported by the Blackfoot Indians. These are the main later events in the history of Canada. The defeat of Laurier in 1911 and the refusal of the Canadian people to countenance reciprocity with the United States, the consolidation of Canadian military strength and the beginnings of a Canadian Navy are also notable and more recent events. In 1748 there were about 50,000 French settlers along the St. Lawrence. In 1912 Canada numbers close on 8,000,000 inhabitants\*.

## II.—†FRONTIERS, MILITARY GEOGRAPHY, RAILWAYS, AND MILITARY SYSTEM, WITH SOME NOTES *re* CANADIAN DEFENCE.

The boundaries of Canada on the north and east are the Arctic

### Boundaries and frontier.

Ocean, and the Atlantic, up to the Bay of Fundy between New Brunswick and Nova Scotia. On the south Canada marches with the United States for nearly 4,000 miles. Starting north from Passamaquoddy Bay, the boundary line curves west, then turns south to the 45th parallel, along which it runs to the St. Lawrence about opposite the Canadian town of Cornwall. From here it takes the centre of the navigable channel of the St. Lawrence to Lake Ontario and continues through Lakes Ontario, Erie, Huron, Superior, and the Lake of the Woods until it strikes the 49th parallel, which it follows to the Pacific. Included in the Dominion, in the Atlantic, are the Arctic Islands, Anticosti, Prince Edward Island, and the Island of Cape Breton; on the Pacific side are Vancouver and the Queen Charlotte Islands. Alaska, purchased by the United States from Russia in 1867, stretches a long

\* The writer is indebted for certain of his facts to various works on Canada, notably those by Mr. A. G. Bradley.

† Generally, the reference in this part is to Map No. 3.

finger southward along the Pacific from about Behring Bay to opposite the head of Queen Charlotte Island. Except for Alaska, everything on the American Continent north of the 49th parallel, an area of about 3,800,000 square miles, is Canada.

The present frontier line has been the result of many different commissions, conventions, and treaties, the last of these being the treaty of 1908 "for the more complete definition and demarcation of the international boundary between the United States and Canada." Following its course throughout, there is an ocean frontier to the north, east, and west, while on the south, for about 2,000 miles from Cape Gaspe to where the 49th parallel cuts the Lake of the Woods, there is practically a water frontier. West of this the frontier line to the Pacific is a parallel of latitude. Parts of the ocean frontier, particularly on the east between Hudson and Belle Isle Straits, are negligible from a military standpoint owing to absence of harbours, and, not many years ago, Hudson Straits and Bay also lacked any military importance. To-day, however, this can scarcely be considered to be the case, as railway enterprise is now pushing feelers northward from the great trans-continental lines to the southern shores of Hudson Bay and there is much talk of ports on the southern shores of this bay as termini for steamship lines from Great Britain and Europe. Whether this can be considered as a possibility of the immediate future is perhaps doubtful. Be that as it may, it is a development that will eventually take place: therefore in any military consideration of the Canadian frontier the entrance to Hudson Bay must have a certain place. South of the St. Lawrence, the State of Maine, United States, pushes a re-entrant north to within a comparatively few miles of that river and in the west, from the Lake of the Woods to the Pacific, a man may stand anywhere with one foot in Canada and another in the United States of America.

Of the many inland waters, river systems, and canals of Canada, the following are the more important from a military point of view:—

#### **Military Geography.**

**Hudson Bay**—Roughly 1,000 miles by 600. Entrance from the Atlantic through Hudson Straits. This Bay has come very much into prominence recently in connection with proposals to establish a line of steamships from either or both Fort Churchill or Port Nelson, on its south-western shores, to Great Britain and Europe. Two lines of railway are now projected starting from Pas on the main line of the new Canadian Northern Railway, the one to Fort Churchill 450 miles, the other to Port Nelson about 400 miles. If and when these two lines are completed the distance by sea and rail from Liverpool *via* Fort Churchill to Vancouver will be shortened by about 800 miles as compared with the distance by sea and rail *via* Cape Race and Montreal, the principal saving of distance being in the rail route between Fort Churchill and the Pacific. Fort Churchill is said to be open and free from ice between July and October only, but it is considered possible to keep the route open all the

year round by the use of ice-breaking steamers. As providing an alternative route from Liverpool to the Pacific this project has a definite military importance.

The St. Lawrence and the Great Lakes.—The length of this water route along the southern frontier of Canada, including the whole of the lake navigation up to Port Arthur at the head of Lake Superior, is about 2,300 miles. As it enters Lake Superior the St. Lawrence is the River St. Louis. Between Superior and Huron it is the St. Marie. Between Huron and St. Clair, the St. Clair. Between St. Clair and Erie, the Detroit. Between Erie and Ontario, the Niagara. It becomes the St. Lawrence only from Kingston, at the foot of Lake Ontario, to the Gulf. The whole of this river and lake system is navigable; ships of war come to Quebec, and large ocean going steamships reach Montreal between May and November. From Montreal lake steamers run to Port Arthur.

Between Montreal and Kingston there are long stretches of rapids turned by canals. These at present only pass vessels up to 14 feet draught, but they are gradually being deepened to 22 feet. In width they vary between 140 and 160 feet, but the locks along their length will only accommodate vessels of not greater than 44 feet beam and 250 feet length. The total length of canals along this stretch is roughly 45 miles and they all lie close along the left bank of the river. Between Lakes Ontario and Erie the Welland canal, length 27 miles, turns the falls and rapids of the Niagara river. From the foot of Lake Erie to the Sault St. Marie canal, between Huron and Superior, there is deep water for large vessels. The Sault St. Marie canal, about one and a half miles long, completes the chain of water communication between the Atlantic and Port Arthur. The deepening and widening of these canals so as to take larger vessels is a matter both of military and commercial necessity, as at present the large steamers which are built and run on the upper lakes cannot pass below the eastern end of Lake Erie.

The more important of the lake ports on the Canadian side are—on Lake Ontario, Kingston, Deseronto, Toronto, Hamilton and Port Dalhousie, at the entrance to the Welland canal. The actual depth of water in these harbours is in no case less than 20 feet. On Lake Erie the principal ports are Colborne at the Erie exit of the Welland canal, Port Dover on the north shore, and Amherstburg about where the Detroit river enters the lake; the anchorages in each case are a minimum of 20 feet. Lake Huron has Collingwood, Midland, and Owen Sound, all fine sheltered harbours with a minimum of 20 to 25 feet of water, on the south and west shores of Georgian Bay. On Lake Superior are the twin ports Port Arthur and Port William adjoining; the former is of great importance as a grain and railway centre. There are repair docks for lake vessels at Kingston, Toronto, Port Dalhousie, Collingwood, Midland, and Port Arthur.

The Saskatchewan river system has a definite importance as, with Lake Winnipeg and the Nelson river, it forms an east and west line of water communication, navigable for small craft, from

Edmonton in Alberta to Port Nelson on Hudson Bay. The north and south Saskatchewan rivers unite near Prince Albert (C. P. Ry.) some 450 miles from their sources in the Rockies, the Saskatchewan then flows some 200 miles east into Lake Winnipeg and is discharged into Hudson Bay through the Nelson river at Port Nelson. With the Nelson river this system is some 1,600 miles in length west to east. Generally, the course of the Saskatchewan between Edmonton and Lake Winnipeg is north of all three main lines of the three great trans-continental railways.

The Assiniboine is the Qu'appelle river at Regina and flows west to east past Brandon, Portage la Prairie, and Winnipeg (C. P. Ry.) into the south end of Lake Winnipeg. It is navigable for boats of 100 tons as far as Fort Ellice some 600 miles west of Winnipeg.

The Red River is well known in connection with Lord Wolesley's "Red River Expedition" of 1870. It flows south to north through the States of Minnesota and Dakota into Lake Winnipeg and is navigable from Moorhead, south of the border on the Northern Pacific Railway, to Lake Winnipeg, a distance of about 400 miles. In connection with the Red River it is worthy of note that a small steamer can leave Moorhead in the United States and reach Edmonton, in Alberta, *via* Red River, Lake Winnipeg, and the Saskatchewan river.

The Ottawa river affords a means of communication by water between Ottawa, the Dominion capital, and the St. Lawrence just above Montreal. It is of importance in connection with the Georgian Bay canal scheme, discussed later.

The Rideau river and canal connect Ottawa with Kingston at the foot of Lake Ontario. This canal was begun in 1812, as a military work, to connect the capital with Lake Ontario. It is 130 miles by water from Kingston to Ottawa and the river and canal are navigable by small steamers only.

The Richilieu and Champlain canals connect the St. Lawrence with Lake Champlain, the outlet on the St. Lawrence being at Sorel below Montreal, where the Richilieu and St. Lawrence join. This canal was also undertaken as a military work but has a depth of seven to eight feet only. Lake Champlain is also connected by canal, south of the border, with the Hudson river.

There are two canal projects in hand which are of importance from a military point of view.

The Trent Valley Canal will when completed connect Lake Ontario, from a point on the Bay of Quinte near Kingston, by river, lake, and canal with the Georgian Bay of Lake Huron, entering the south-east corner of the bay by the Severn river. This canal is partially completed. It will be navigable by small craft only.

The Georgian Bay canal project has been sanctioned by the Dominion Government and the route has been completely surveyed. It will connect the Georgian Bay of Lake Huron at its north-east corner with Montreal by way of the Ottawa river and Lake Nipissing. The length of this waterway will be about 450 miles

of which the major portion will be river and lake. The effect of the project, when completed, will be to provide a waterway between the Atlantic and Lake Superior north of and in addition to the existing passage *viâ* the St. Lawrence and the lakes. The depth throughout is to be not less than 22 feet which will be sufficient to pass the large lake vessels. By this route Port Arthur will be brought within 940 miles of Montreal and the length of the water route between Great Britain and Port Arthur will be considerably reduced. Between Montreal and Port Arthur this waterway will be well to the north of the international boundary. It will be ice free except between December and May.

Owing to the presence of ice, the Canadian river and canals, as well as the lake ports, are closed to navigation during the winter months. **Some considerations re the above waterways.** Not only are vessels unable to ascend or descend the rivers and navigate the lakes but in most cases the rivers lose a part of their character as military obstacles. On the St. Lawrence, for instance, during a part of the winter there is a good driving road across the ice between the American shore at Cape Vincent and Kingston, while between Kingston and Brockville again, a length of 40 miles, heavily laden teams cross in many places without difficulty. In the early spring when the lake and river ice is moving seaward navigation and crossing are both equally impossible. During the war of 1812—15 frequent expeditions were made both by Canadians and Americans across the ice of the St. Lawrence, notably the attack on Ogdensburg by the Canadians under Macdonnell. The width of the St. Lawrence between Montreal and Kingston is a very variable quantity; in some places the river narrows to little more than a mile. This for the artillery and small arms of the present time is not a great distance. The St. Lawrence and the Welland canals lie close along the northern and western shores of the rivers and in consequence are open to attack or destruction from the American side. There are also bridges and tunnels across and under the river frontier at more than one point. With reference to the sea ports, Halifax, Nova Scotia, Sydney, Cape Breton, and St. John, New Brunswick on the Bay of Fundy, are open all the year round. Montreal and Quebec are closed during the winter months on account of the ice.

In a recent work on Canada\* the importance, from a military point of view, of railway construction both in the U. S. and the Dominion is treated of at some length. **Railways.** "What was trackless wilderness in 1814 is now covered with railways which traverse both countries close to the frontier in many directions, connecting all the chief cities and towns and linking, by more than one line, the Atlantic and Pacific." Whereas in 1812 railways were non-existent, Canada

\* Canada and Canadian Defence, by Major-General Robinson, C.B. The writer is indebted to this work for certain of the facts in connection with the waterways of Canada.

had, in 1910, 30,000 miles of rail communication within her own borders and this mileage is being added to every year that passes. The principal development has been in the direction from east to west, but as each one of the great trans-continental lines pushes its way westward and new country is opened up, feeder lines are pushed north and south also until, to-day, from Winnipeg west to the Pacific and from the 49th parallel north to the 54th, the railway map shows a belt thickly covered with a network of lines, a wonderful development within comparatively a very few years. Most interesting is it to re-visit Canada even after five or six years' absence; one cannot then but be impressed by the extraordinary imagination of the Canadian people in dealing with the development of their country, their unbounded faith in its future, and their contempt for those who think of risk or hint at possibilities of failure in connection with the big projects they have in hand in their western and northern lands. It is difficult even in writing of the great trans-continental lines of Canada not to be stirred by the romantic side of these great undertakings: on the spot, it is impossible not to feel the romance of it all very deeply. But we are concerned here with facts.

There are five great railway systems in Canada at the present time, as follows:—

- (i) The Inter-colonial Railway system connects the Maritime Provinces, *i.e.*, Nova Scotia, Cape Breton, New Brunswick and Prince Edward Island, with the provinces of Quebec and Ontario. From Sydney, Cape Breton and Charlotte town, Prince Edward Island, there is rail connection with Halifax, Nova Scotia, broken by the Straits of Canso and Northumberland Strait, both very short passages. From Halifax the I. C. R. crosses Nova Scotia to Moncton, New Brunswick, thence it runs north-west skirting the Baie des Chaleurs, to the south shore of the St. Lawrence about Rimouski where the line turns south along the south shore to Quebec and Montreal, the communications with St. John New Brunswick being by a branch line to Moncton. The main line runs entirely through Canadian territory well to the east of the frontier. The object of this line was partly commercial, partly military. It is owned and worked by the Dominion Government and was begun as a pledge of confederation soon after 1867, opened in 1876. In connection with this system there is talk of a new port at Gaspè, on the south shore and at the mouth of the St. Lawrence. Should this materialise the sea voyage between Liverpool and the Dominion would be considerably shortened.
- (ii) The Grand Trunk Railway system originally incorporated in 1852 connects at Point Levis, opposite Quebec, with the Inter-colonial Railway. The main line, in Canadian territory, runs from Quebec to Montreal, south of the

St. Lawrence, crosses the river at Montreal by the Victoria bridge and continues along the north shore to Kingston, thence close along the north shore of Lake Ontario to Toronto, and continues through London to Sarnia, opposite Port Huron at the south end of Lake Huron, where the St. Clair river runs out of that lake.

From a military point of view the more important branches are—

From Montreal through Ottawa, west, to Parry Sound on the eastern shore of Georgian Bay, Lake Huron.

From Cobourg, on the north shore of Lake Ontario, north-west, through Atherley and North Ontario to a junction with the main line of the Grand Trunk Pacific at Cochrane.

From various points on the main line between Belleville and Toronto, on the north shore of Lake Ontario, north, to the eastern shore of Lake Huron and to Georgian Bay.

From Toronto to Hamilton, at the west end of Lake Ontario and the Niagara frontier, thence through Hamilton, south, to the north shore of Lake Erie and along that lake to Windsor at the foot of Lake St. Clair, opposite Detroit. Between Montreal and Ottawa on the Grand Trunk line there are no less than five *projected* connections, north, to the main line of the Grand Trunk Pacific between Quebec and Lake Nipigon.

South of the border, a branch runs from Montreal to Portland on the Atlantic seaboard and there is a connection, also from Montreal south, with the Central Vermont Railway through Albany to New York. From Hamilton, the Grand Trunk connects with American lines at Buffalo and from Port Huron the Chicago and Grand Trunk line continues on to Chicago at the foot of Lake Michigan.

This system has a very definite military value providing as it does lateral communication along the frontier between Quebec and Sarnia. It also provides communication by rail north to Georgian Bay, as well as south to the American frontier through the eastern townships of the Quebec province. The line between Quebec and Montreal on the south shore of the St. Lawrence is a weak link in the chain of lateral communication but the C. P. R. provides a line along the north shore between these points.

Of the three great trans-continental lines the C. P. R., the G. T. P. and the C. N. it will be convenient to take the Grand Trunk Pacific first as it is *practically* a part of the Grand Trunk system just described.

- (iii) By the Act of Parliament, under which it was incorporated in 1903, the Company is in agreement with the



Dominion Government to construct and operate a line of railway from the Atlantic to the Pacific *wholly within Canadian territory* and of an estimated main line mileage of 3,600 miles.

The eastern terminus of the line will be at Moncton N. B. from which station the seaport of Halifax N. S. will be reached by the I. C. Ry., 185 miles, a branch line being projected to the port of St. John N. B., 89 miles. The western terminus will be at Prince Rupert, British Columbia (Port Simpson) near the southern boundary of Alaska.

The main line is to run from Moncton, by the most practicable route within the Quebec province to Quebec. At Chaudiere Junction, five miles above Quebec, it will cross the St. Lawrence, thence taking the most direct route just north of Lakes Abitibi and Nipigon to Winnipeg. This portion of the line will be built at the cost of Government and leased to the company. From Winnipeg the route is *via* Saskatoon, Edmonton, Wolfe Creek, Alberta, and the Yellowhead Pass over the Rockies (3,712 feet) to Prince Rupert on the Pacific, the western terminus.

Prince Rupert is 40 miles south of the southern extremity of Alaska and 550 miles north of Vancouver and is reached from the Pacific *via* Dixon entrance and Brown passage. It possesses very great advantages to ocean shipping having a direct channel passage leading into it with a maximum width of 2,000 feet and a low water minimum depth of 36 feet; the harbour is of sufficient extent to accommodate an enormous amount of shipping. Already a steamship line is in operation between Seattle, Victoria, Vancouver, and Prince Rupert where very considerable progress has been made with docking accommodation.

At the present date the entire main line, 3,550 miles, is either constructed or under contract, as are also branches of 1,250 miles. The track to-day is actually laid continuously from Fort William, Lake Superior, *via* Winnipeg and Edmonton to Tele Jaune Cache, B. C., 300 miles west of Edmonton, while, from the western terminus easterly, rail head has reached mile 162. The gap through the northern part of B. C. is 400 miles and it is confidently expected that by the latter part of 1914, through communication to the Pacific will be entirely complete. Daily passenger trains are now running over the 792 miles between Winnipeg and Edmonton.

The more important branches from the main line are from Fort George, due south, down the Frazer river valley to Vancouver; Ellison, north-west, to Dawson (Yukon);

Edmonton, south, to Calgary; Melville, north, to Fort Churchill Hudson Bay. From various points between the north of Lake Nipigon and Quebec, five branch lines south to the Grand Trunk system, in addition to one branch now in operation from Cochrane to Cobourg on the north shore of Lake Ontario. From Port Arthur, Lake Superior, there is a branch, in operation, to the main line about 200 miles north-west at Superior junction.

The special value of this line from a military stand-point is the fact of its being an all-Canadian line from sea to sea. In rounding the northern extremity of the State of Maine it runs for a length of about 150 miles close to the American border and again from the north of the Lake of the Woods to Brandon, about 275 miles, it runs within 100 miles of the 49th parallel, but throughout the remainder of its length its distance from the boundary lines is so great as practically to preclude the idea of its being seriously interfered with in case of war.

- (iv) The Canadian Pacific Railway was the first trans-continental line built in Canada and since its opening in 1886 it has been the principal factor in the development and opening up of Western Canada.

From St. John N. B., the C. P. R., crosses the State of Maine and runs through the eastern townships of Quebec to Montreal, thence by Ottawa and north of Lake Nipissing to Port Arthur, on Lake Superior, and Winnipeg and from Winnipeg, *viâ* Calgary and the Kicking Horse Pass through the Rockies, to Vancouver. The many branches of this line run to Halifax, Fredric town, Quebec, and Toronto in the east; and in the west, branches are pushed out north and south of the main line from almost every station of any importance. In connection with the C. P. R., is a line of steamships from Vancouver to Yokohama and Hong-Kong and from Montreal to Liverpool. This line is one of great importance to the empire, but it lies easily open to destruction from south of the border in many localities, principally along the length north and west of Lake Superior.

- (v) The Canadian Northern Railway connects Port Arthur *viâ* the south shores of the Lake of the Woods with Winnipeg, thence a through line runs *viâ* Battleford to Edmonton. Ultimately the line will be extended through the Yellow-head Pass to Vancouver and on to a point at the north end of Vancouver Island. From Portage la Prairie a loop line has also been constructed, south, *viâ* Regina to Saskatoon on the main line. From Saskatoon branches north to Prince Albert and west to Calgary are also

in operation. Battleford and Prince Albert have also been connected up and from Prince Albert and Le Pas lines are at present under construction to the south shores of Hudson Bay. From Winnipeg there will eventually be connections with Georgian Bay, Toronto, and Quebec.

Quite outside any question as to the advantages of these railways in the improbable event of any trouble with the United States, the advantages to the empire generally of the enormous development of railway communication in Eastern and Western Canada is very apparent. The opening up of the Canadian west and north, the development of the natural resources of the country, increase in population, etc., are all matters of the most vital interest and importance to Greater Britain. The great grain producing districts of Western Canada are brought near to Great Britain. Transport of troops to the Pacific coast is rendered easier, and the distance from Liverpool to the Pacific, and also to China and Japan, is very materially reduced. To all who are interested in empire politics the history of railway development in Canada during the last decade cannot fail but be of great interest and, to the soldier particularly, a more intimate knowledge of what has been done and of what is being done to-day by the Canadian people towards developing and opening up their vast territory does not fall in importance very far below the study of campaigns and the art of war generally. Solidarity understanding, and appreciation of each other's efforts is essential if the empire is to hold together, and there appears to be little doubt that if it is to hold together the component parts will some day soon be required to fight together. Therefore, for all of us, the better we know each other and each other's history the stronger we shall stand together if and when the time comes for us to do so.

Away back in the middle of the seventeenth century companies of militia were enrolled in the parishes of French Canada as a protection and for use against the savage Iroquois nation with whom the French were then constantly at war. Thus did a militia come into being in Canada, and from that time up to the present the liability to serve has been steadily recognised by Canadians, under whatever Government. French and English have taken the field together many times, both inside their own borders in defence of their common country, and outside their boundaries in the cause of empire. As the British army has a glorious tradition so also has the militia of Canada, of which the country is rightly proud, and it is that which in part accounts for the universal interest displayed in militia matters by the people generally throughout the whole Dominion. The liability of every individual to serve his country when required has been the ideal held by successive Governments and accepted by succeeding generations of Canadians and, within the last decade, the assumption by Canada of full responsibility for the defence of certain

Canadian seaports and the consequent withdrawal from Canada of British garrisons has shown how clearly this ideal is realised ; nor are other more recent signs wanting in the political, naval, and military policy of the Canadian Government to indicate how thoroughly Canada recognises her responsibilities and how highly she values her connection with Great Britain and her place as first among the daughter nations of the empire.

The militia force of the Dominion is divided into the "active" and the "reserve" militia. The active militia comprises corps raised both by voluntary enlistment and by ballot ; the former includes the permanently embodied force and certain city and rural corps raised on a militia basis, the ballot provides a means of further completing these corps under certain laid down conditions. Under the Act, the reserve militia includes the whole male population, if and whenever it becomes apparent to Government that their services are required. As an organized force, the militia can only be called upon to serve in defence of Canada, but individuals have in the past been frequently allowed to volunteer for service in, or in defence of, any part of the empire.

The Imperial Defence Conference of 1909 formulated the idea of organizing the forces of the Crown, wherever they may be, so that, while preserving the autonomy of each Dominion, should the Dominions desire to assist in defence of the empire in a real emergency, their forces could be rapidly combined into one homogenous Imperial army. Since this conference Canada has established the nucleus of a General Staff, the chief of the staff being a member of the Canadian militia council, and certain vacancies in the Camberley Staff College are now open for competition among specially recommended Canadian officers. The Royal Military College of Canada trains cadets as well for the Imperial as for the Canadian forces, while interchanges of officers between the Dominion, India, and the mother country provide opportunities for selected officers to study the organization, etc., of the forces maintained by each ; recently also the appointment to the staffs of commands and districts in Canada of a certain number of general staff officers from home has been arranged for.

The Dominion itself has been divided into certain military districts for purpose of command and administration, and, in order to exercise officers in the duties of high command, certain of these districts have also been combined into "commands" ; militia matters generally are regulated at headquarters by a council of seven members with the Minister of Militia and Defence as president and subordinate to this is an inspector-general with inspectors under him for each arm or auxiliary service.

The present peace establishment of the active militia is roughly about 50,000 which comprises the city and rural corps and the permanent force. The former train at local headquarters, the rural corps train annually in camps of exercise while the permanent force, which has an establishment of about 5,000, serve as models in organization and also schools of instruction for the remainder of the

militia force and auxiliary services. Field firing, tactical exercises, and manœuvres on a larger scale are carried out annually in particular areas set apart by Government for such purposes. The higher organization of the force is provided for by its allotment to brigades of cavalry, artillery, and infantry, while the Dominion arsenal at Quebec and the rifle factory provide for arms and ammunition required by the force. Such is, generally, the organization of the Canadian forces.

An examination into the military strength of the United States does not properly fall within the limits of this paper, but it will be of interest to outline the development and growth of the American military system, particularly as this is a subject regarding which it is somewhat difficult to obtain accurate and recent information. The war of American Independence, which lasted for six years, was fought on the American side by an army without much in the way of organization, equipment, or supplies. In studying this war, what strikes one most forcibly is the extraordinary ineptitude of most of our generals, the control exercised over them from England, and the brilliant qualities as a soldier and a leader displayed by General Washington throughout the whole course of the operations. At Bunker's Hill the Americans held their own successfully against the best European troops, and as a result of that battle and of the war which followed it there has, up to comparatively recent times, been no very great belief in America as to the necessity for a regular national military organization. Even as late as 1861, according to Henderson, "the need of discipline and training for the fearless and intelligent representatives of the sovereign people was scornfully repudiated." Washington was almost alone in insisting, both during the war of independence and after, upon the necessity for an army properly organized, trained, and equipped.\*

From 1783 to 1846 belief in an untrained militia held the field in America. With the outbreak of war with Mexico in the latter year the President of the United States was, for the first time, authorised to call for as well as to accept volunteers, up to a strength of 150,000 and for a period of one year's service; he was also empowered to employ the militia for a period of six months and to raise certain regiments. After this war the total *authorised* strength of the American army stood at about 15,000 men.

The outbreak between the North and South in 1861 found the actual strength of the Federal army at about 10,000 and, during the four years of war, the numbers actually available for service, in the North, were roughly 4,500,000 of whom about 2,000,000 were enlisted, the maximum number actually under arms at any one time being 970,000. These numbers were raised at first by successive calls for volunteers; later, by conscription. At the close

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\* Most of the figures that follow are taken from articles on the U. S. Army by F. V. Greene.

of the war the total authorised army strength was 47,800 which was gradually reduced until, in 1874, the actual strength stood at 25,000.

In 1898 came war with Spain. The standing army was increased to 63,000 and an enactment was passed giving power to the President "at any time that a volunteer army may appear necessary" to raise volunteer troops, generally, and a volunteer brigade of engineers, particularly, "*from the nation at large*" instead of from the States; the Act also authorised the raising of a special volunteer force of 10,000 enlisted men, "possessing immunity from diseases incidental to tropical climates." The actual increases during one month, at the time of the war, were regulars from 25,000 to 44,000, volunteers up to 125,000. In three months the regulars reached a total of 56,200, the volunteers touched 212,000, and all were organized, armed, and equipped. The conclusion of the war saw 59,000 regulars, 16,000 United States volunteers and 200,000 *State* volunteers in the field. At the outbreak of the Philippine insurrection a strength of 65,000 was enacted for the regular army, with 35,000 volunteers "*from the nation at large*." When the Philippine insurrection was crushed the regulars were again reduced to 28,000.

These figures serve to show what has, in the past, been accomplished by the United States in the matter of organizing, arming, equipping, and placing in the field large bodies of men, and, quite recently, the American General Staff were able during nine days to concentrate 20,000 men on the borders of Texas to meet eventualities there. But the number of able-bodied men cannot be taken as the true criterion of a country's strength; warfare at the present time requires much more than mere numbers.

Between 1899 and 1902 the American army was again reorganized. The number of officers was fixed at 4,000 and the enlisted strength at between 60,000 and 100,000 and, between 1902--10, *actual* strength has varied between 60,000 and 79,000. The strength of "a fully trained, armed and equipped militia subject to the President's order" was fixed at from 120,000 to 150,000. A General Staff has been formed, coast defence forts have been armed, a large amount of money has been spent on West Point, and a "War College" has been established. A feature of this reorganization is the statement of the principle that "the real object of having a standing army is to prepare for war—" a self-evident proposition but one only lately recognised in America.

At the present time there is a bill pending in Congress which provides for three classes of volunteers :—

(i) Those from the organized militia who volunteer for a longer period than nine months.

(ii) A class composed of officers and men with previous military service.

(iii) Volunteers organized by the States.

(i) and (ii) are estimated at 70,000; (iii) is limited only by conditions as to armament, supplies, etc.

As yet, the American standing army has no higher organization in brigades, etc., but the proportion between the different arms is fixed as follows :—

Cavalry, 15 regiments.		Artillery, 6 regiments.
Engineers, 1 regiment.		Coast Defence Artillery.

There are seven battalions of scouts, officered from the army or from those who have served in the Spanish-American war, for service in the Philippines ; these with one Porto Rico regiment completes the tale of the present standing army of the United States which, to-day, numbers roughly 73,800 men.

In connection with the subject of "Canadian defence," the possibility of an attack upon Canada from the south has been touched upon by several writers and, although such a possibility is exceedingly remote, there is much of interest for academic discussion in the consideration of this contingency. There is neither place nor space here to discuss this matter in detail, but a brief reference may be made to views that have been advanced by more than one writer on the subject.

**Some considerations  
re "Canadian defence."**

Speaking generally, those who have treated of it are perhaps too greatly troubled both by the length of the southern frontier of Canada and also by the fact that a great length of that frontier lies open to the south. Stress has also been laid upon the developments that have taken place in the west and north of Canada during the past few years, the towns and cities that have sprung into being in the western and northern lands, and the varied and important interests that are now centred west of Lake Superior and north to the Hudson Bay region ; the general conclusion drawn is that whereas, in earlier days, the neighbourhood of Detroit was practically "farthest west" in Canada, present and near future conditions would render it necessary to take the whole southern frontier from the Atlantic to the Pacific, and also the shores of Hudson Bay, into very serious account should any unforeseen contingency ever again place Canada upon her defence against her southern neighbour.

Now, in such a case, it would certainly be eminently desirable to protect the whole southern frontier of Canada so as to prevent any damage whatsoever to property or vested interests, interruption of rail communication from east to west, etc.; but in dealing with any defence problem, whether it be that of a frontier or of a locality only, there must always be a compromise between what is *desirable* and what is actually *necessary* and also actually *possible*, having regard to all governing conditions as they actually exist at the time.

What is *desirable* has been stated. One of the elementary principles of strategy contains the guide to what is *necessary*, that is to avoid dispersion of force along a whole frontier and to concentrate force at decisive points, *i.e.*, such points as are most liable to serious attack and from which counteraction can best be undertaken. With regard to the determination of these points, past history furnishes one guide ; there is another in present day knowledge in the light

of which it is not difficult to determine the particular locality within which lies the heart of Canada. It is against the heart that the most serious effort would in all human probability be made, and it is the locality in which the heart is contained that demands attention first of all. Protect the heart, strike with all possible strength at what menaces it, the remainder of the body is of infinitely smaller import. As to the degree of strength available for protection and counteraction, the questions of naval action, numbers, organization, equipment and training of the land forces, communications, supply, etc., must all receive consideration before what is *possible* can be arrived at.

Such generally is the way to approach the subject under reference. It is a most interesting study, this question of "Canadian defence." There is no intention of examining it further here, but it will well repay examination and thought by students of military science. Solutions to all the points involved are by no means obvious, and, should the eventuality spoken of ever actually occur, the soldier and the politicians would, as has so often been the case in past history, certainly find themselves at variance as to whether or not the correct course, governed by sound strategy, should be pursued.

The Rush-Bagot Convention is probably well known as to its terms, but it may fitly be referred to here.

**The Rush-Bagot Convention, etc.**

It was entered into by Great Britain and the United States in 1814 and under it naval strength on the Great Lakes, on each side, is limited to the following, *viz.*, one vessel on Lake Ontario, two vessels on the upper lakes, and one only on Lake Champlain. From articles which have from time to time appeared in the press there appears to be some doubt as to whether the United States have adhered to the actual spirit of this Convention, as American ships, for training and other purposes, have passed up to the lakes where they are said to have been armed.

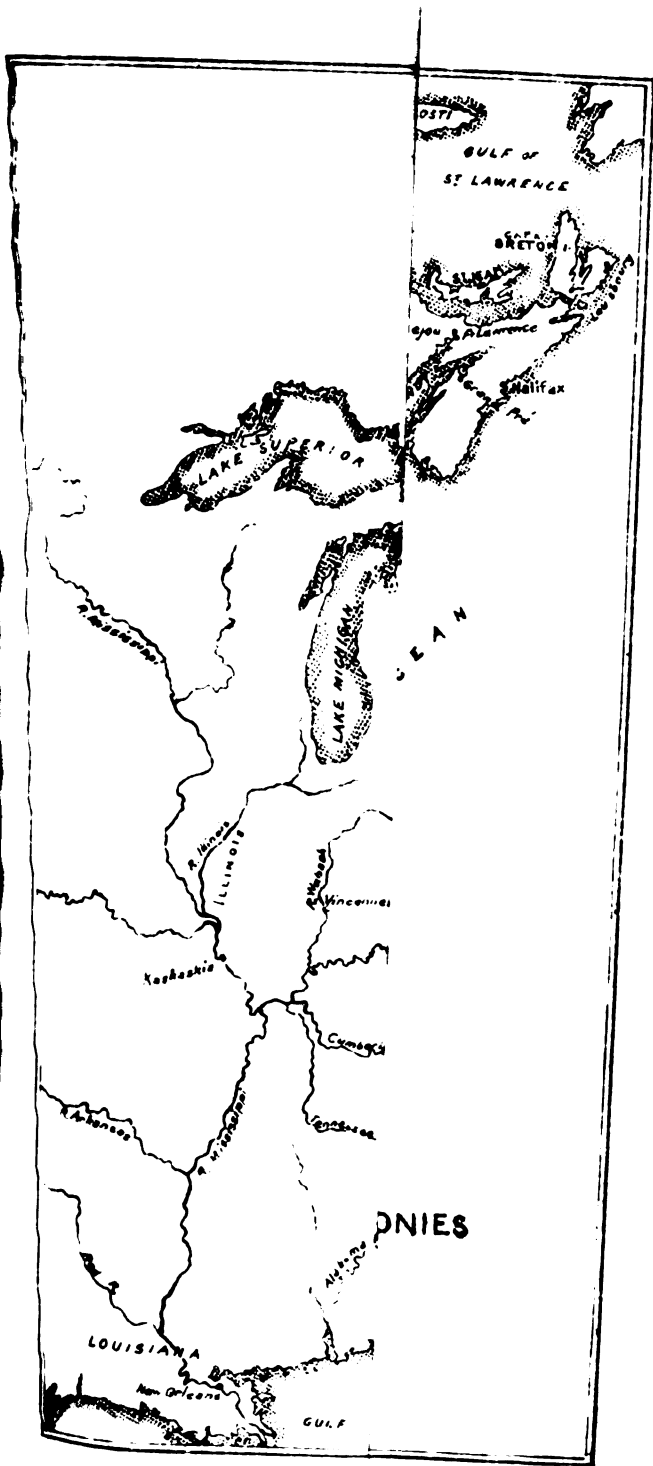
There are two other matters which it may also be well to mention:—

- (i) The *principle* of a contribution by Canada to the naval strength of the empire has been accepted by the Canadian nation, although the exact terms of that contribution are still for settlement.
- (ii) The Panama Canal will probably be opened in October 1913. On the seaboard of North America, this practically doubles, to the United States, the value of each one of her fighting ships.

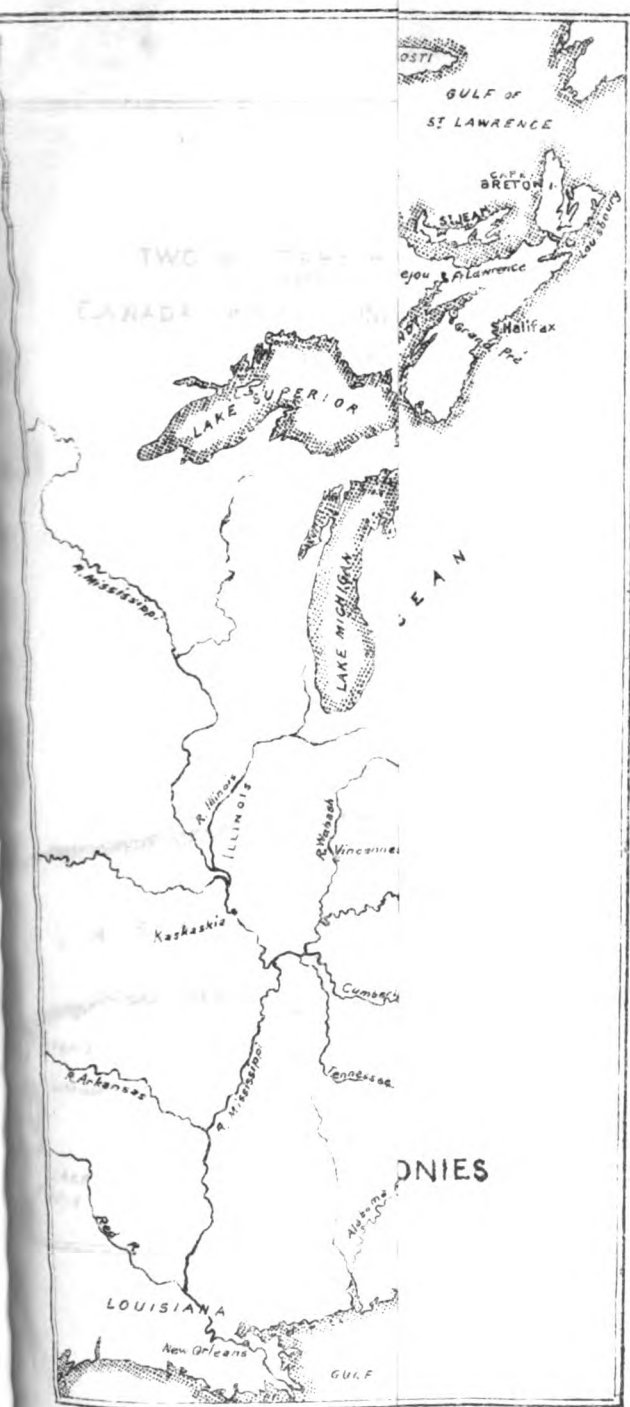
In concluding these notes on Canada it remains to say that what is of the greatest importance to the British Empire is the undeniable fact that the heart of the great Canadian nation is sound. In the past, this has been made abundantly manifest in many ways and upon many occasions. The most recent and also perhaps the most unmistakable evidences of its truth are the

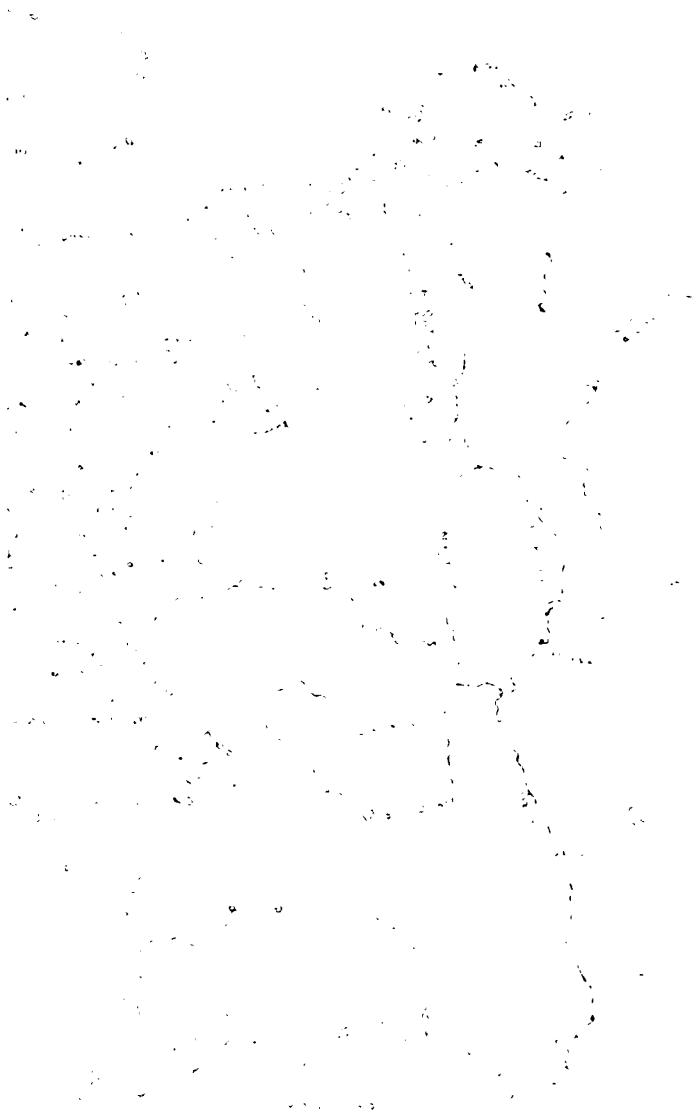


attitude of Canada to-day towards the naval and military policy of the empire and the recent defeat of the reciprocity measure introduced by the late Liberal Government, the latter constituting, as it does, a direct refusal on the part of the Canadian people to be drawn into the orbit of American ambitions and politics.

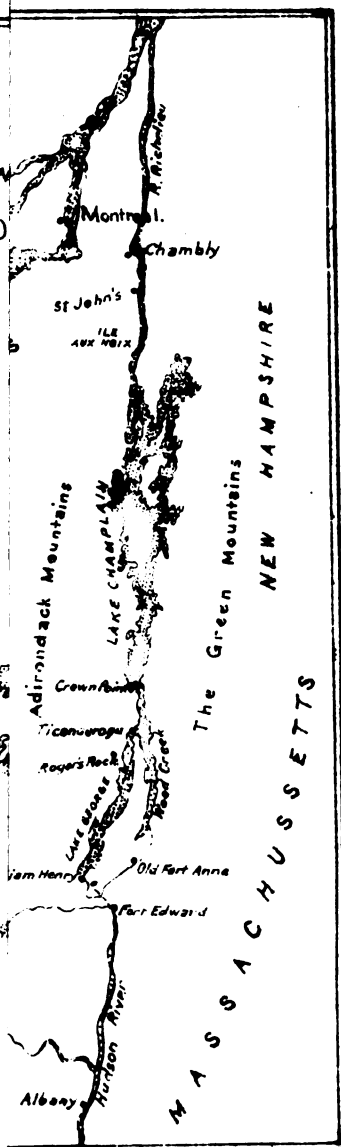


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TWO MILITARY HIGHWAYS  
between  
CANADA and UNITED  
(1748 - 56)



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## MILITARY AERONAUTICS.

By Captain S. D. Massy, 29th Punjabis,

on 9th July 1912.

H. E. The Commander-in-Chief, in the Chair.

**THE LECTURER:** Your Excellencies, ladies and gentlemen,—This lecture is entitled "Military Aeronautics," but perhaps it would be more accurate to describe it as merely an outline of what has been done in the past and what we ourselves and other nations are doing now. Present development is of such extreme rapidity, that it is quite impossible to predict the degree of indispensability with which the subject will be regarded in the near future.

There is not nearly sufficient time at your disposal to listen to anything approaching a full account of the subject, even were I capable of giving you one. I trust, therefore, you will be lenient with me if I appear to gloss over any matter which seems to require detailed explanation.

There is a mass of legend relating to flight by man which is both curious and interesting as showing how its possibilities have been considered from remote ages down to the present time. The first name that we may note in connection with human flight is that of Leonardo da Vinci, who died nearly 400 years ago. In addition to being a great artist, (and it is unfortunately only in this connection that he is known to the general public,) he was also skilled in anatomy, mathematics, and the science of his day. These attainments assisted him in the production of a flying-machine with many remarkable qualities. The power-plant was, of necessity, the man who flew it. The machine's chief feature was its jointed wings, which contracted on the up-stroke and expanded on the down-stroke.

After that date some considerable time elapsed before it was recognised that flying-machines should be developed along the lines of a soaring apparatus. In the interval, however, much thought had been devoted to lighter-than-air machines. In 1670, for instance, Francesco Lana designed an airship supported by vacuum globes. In 1782, Montgolfier invented the hot-air balloon. In the following year Rozier made the first balloon ascent and Robert built a hydrogen gas balloon. The first cross-Channel flight by balloon was made by Blanchard in 1785. In 1824 Henson and Stringfellow began their investigations, and to them and Wenham must be attributed a large share in the evolution of the prototype of the modern aeroplane.

The experiments and investigations of these three were carried still further forward by Otto Lilienthal (1848—96). In 1852 Giffard built a dirigible fitted with a steam-engine. Pilcher commenced

his gliding experiments in England in 1895, and in the following year, Chanute introduced gliding into America.

I have given enough instances to show that we have for centuries been endeavouring to fly; and in explanation of the failure met with till quite recently, I will quote two sentences of Sir Hiram Maxim's. He says:—"Mathematicians have always told us that a flying-machine would be possible just as soon as a suitable motor for the purpose was discovered. They have always said, 'give us the motor and we will very soon give you the flying-machine.'" I will refer to this question of a suitable motor at greater length hereafter, and will endeavour to point out how the whole question of mechanical flight was hung up for want of this power-plant. From the year 1882, Sir Hiram devoted considerable time and money to the subject, and by 1893 he had constructed an aeroplane of colossal proportions which was chiefly remarkable for being fitted with a steam engine of his own design. This worked at a boiler-pressure of 320lbs. and developed 360 h. p. at 375 revolutions. Unfortunately I am unable to state the weight of this engine. It now lies in the engineering section of the Victoria and Albert Museum, Kensington. So sure was Maxim that his machine would lift, that he ran it down a track specially devised to prevent its doing so, as he wanted to conduct certain experiments with it beforehand. Nevertheless at the third trial, it tore up 100 feet of this track and would have continued in the air, but for the closing of the engine throttle to prevent further damage.

In 1905 the performances in America of the brothers Wilbur and Orville Wright attracted attention. Hitherto, all experiments had been conducted, as far as possible, in secret, but in October 1905 their machine, a biplane fitted with a 24 h.-p. motor, did what was then a record in the shape of 24 miles in 38 minutes. During that year, the Wrights made 45 flights and covered several hundred miles in the aggregate. They resolutely shunned publicity until the machine was as perfect as the then available knowledge could make it. In the Autumn of 1908, they brought it to France and astonished the world with its performances.

From 1908 to the present day the evolution of mechanical flight has been astonishingly rapid, and amongst other side issues directly connected therewith is the investigation of the atmosphere, both in its upper and lower levels. It is of extreme importance that we should have a far greater knowledge of this than we already possess.

What is known as the atmosphere, air, or, in other words, what we breathe, is believed to terminate at a height vertically above the earth's surface

of 10 miles, or over 50,000 feet. A height of 34,000 feet has been attained in a free balloon. This happened to be an accident, and, needless to say, the aeronauts did not remain at this altitude longer than they could help. In addition to the atmosphere being what we breathe, it is also what we are now commencing to fly in. Here I would point out that navigating the air in a flying-machine is

analogous to navigating the sea in a submarine, once the latter is submerged, in that, in addition to having to keep control of the aircraft's horizontal movements, it is also necessary to maintain its fore and aft and its lateral equilibrium. This latter is the problem above all others awaiting solution.

We know but little of the atmosphere in general and the upper atmosphere in particular. Two reasons account for this lack of knowledge. First, its very nature and volume render it difficult to study with scientific precision. Secondly, the importance of possessing this knowledge was hardly realised till flying became general. Very valuable investigations concerning the upper atmosphere have undoubtedly been made in the past, but it will be due to the advent of mechanical flight if, as assuredly will one day be the case, we ever have complete knowledge of the atmosphere from sea-level to the height at which it ceases in space.

The state of the weather is nowadays forecasted with considerable accuracy for 24 hours and more ahead, and there is no reason to suppose that, given the money for research work, it will be impossible to foretell weather several days in advance. The vital necessity for accurate weather prophecies to render safe the lengthy cross-country journeys that will be common a few years hence, is obvious.

Naturally we know more about what may be called the bed of the atmosphere. That is, from sea-level up to about 3 to 4,000 feet and I will endeavour to describe as briefly as possible how it is experienced by an aeroplane pilot in its calms, winds, and gusts.

Flying in a flat calm at dawn is a very different thing to flying at noon on a bright sunny day. Add to the calm at dawn a slight frost unaccompanied by fog on the preceding night and you have a combination of the best possible conditions for flight.

The foregoing statement leads one to enquire what is the difference between the state of the atmosphere on a chilly dawn and its state at noon with the sun shining. In the first case

**Wind pockets, or remous.**

there is a complete absence of gusts, eddies, wind-pockets, and so-called 'holes in the air,' all of which terms are summed up in the French word *remou*. When a *remou* is experienced in the absence of wind, it is due to the varying intensity of the radiation of the sun's heat from the earth's surface. This is commonly called a heat *remou*. For example, imagine a man in the course of a cross-country journey having to fly successively over a meadow, a river, a dry field of stubble, and a wood in full summer foliage. Conditions, absence of wind, bright sun, flat country; time between 9 A.M. and 5 P.M. You will note my having said 'absence of wind' and not 'calm.' From the aviator's point of view, there is a deal of difference, which I will try to explain. In reality, unless he flies over this country at an altitude exceeding 1,000 feet, he will, under the given conditions of weather and time, come in for a more or less severe buffeting and will veritably have to work his passage. When he leaves the meadow below him and passes over the water,

he will lose altitude, sometimes of several feet, with the suddenness of a jerk. This is always more or less disconcerting because, apart from the unpleasant sensation such as is felt when a lift suddenly descends unexpectedly, he has no means of knowing how far he is going to be dropped. Having steadied himself and his machine after this little incident, he now makes ready to sit tight for the corresponding rise which will be experienced when he leaves the river and passes over to the stubble field. This will, however, be less emphatic than the previous drop, because the action of gravity has a more steadying effect when one is being forced upwards than when the air appears to resolve itself into something less than nothing beneath one's machine and one commences to fall. Passing from the dry stubble, the aviator arrives over the dark wood, and here he will find a drop almost as sudden as the one he weathered when leaving the meadow for the river. To illustrate my point, I have of course given an extreme example so far as weather is concerned, though the type of country described is not uncommonly met with in Europe. Why does the aviator experience a drop when going from the meadow to the river, a rise from the river to the stubble, and a drop from stubble to wood? Because (and this is the sole reason under the given conditions) the heat radiation from the water is practically *nil* by comparison with that from off the meadow, and particularly the stubble, which is dry and of light colour. Similarly the radiation from the dark wood is much less than from the stubble field. All heat *remous* are of this nature and are in short vertically ascending or descending currents of air. Land *remous* of course are caused by wind blowing over the unevennesses, natural or artificial, of the earth's surface. A man flying north, in a wind blowing south, over a ridge similar to the Hog's Back in Surrey, would, were he flying low enough, experience a drop just before reaching the crest of the ridge and a rise on coming almost perpendicularly over it. Land *remous*, except of course in mountainous country, are not noticeable at such high altitudes as heat *remous*. That is to say, in a country, such as the south of England, omitting perhaps the Sussex Downs, a cross-country flight undertaken at an altitude of 2,000 feet would probably be performed free from land *remous*. Given wind and sun you naturally have a combination of the two kinds of *remou*.

Since it is the sun which, in the absence of wind, causes most of the atmospheric disturbance at the earth's surface, flying is, for preference, mostly done from dawn till about two hours after sunrise, and from an hour before sunset till dusk. This, however, is by no means a hard-and-fast rule. What with the rapid improvement in planes and engines and the undoubted advance in the skill of the pilots, it is becoming less and less difficult to be in the air during any period of daylight.

Temperature, as far as the pilot is concerned, is not of great importance. Undoubtedly it is about the coldest thing I know to sit in an aeroplane and fly over country white with hoar-frost, but it is by no means so

severe as to incapacitate one. Leather garments, fur gloves, and a cap protecting ears, chin, and head prevent one from being frost-bitten.

I am unaware of any flights having been undertaken in very high temperatures such as obtain in this country in the summer months. I think the atmosphere is probably in a more or less disturbed condition, due to excessive heat radiation, and difficulties may be expected with regard to engine-heating troubles. For the pilot, if it be calm, it can but be a pure delight. The higher he climbs the cooler it will be, and he is all the time sitting in a steady air blast.

Flying in rain adds weight to the machine and greatly restricts powers of observation. Added weight means

**Rain.**

reduced climbing facilities and a longer run on the ground to get off. I was once a passenger in a water-logged machine piloted by a very skilful flier in the late Air Battalion. He was quite unable to coax the machine more than a few feet above the ground, and we had an exciting five minutes clearing hedges by inches.

1910 probably saw more types of aeroplane than will any subsequent year. Flying received its great

**Modern types of aeroplanes.**

impetus in 1908. During the following twelve months anybody who had any ideas

on the subject and the money to put them into being was busy at work, and the exhibitions and flying grounds of 1910 were the witnesses of these productions. In addition to monoplanes, biplanes, and triplanes which never actually flew, or which hopped with extreme clumsiness, there were numbers of subtle variations of these, to say nothing of helicopters, paddle-box machines, and others still more wonderful. The majority were found to be impracticable, but a few became the prototypes of the machines of the present day. Notable amongst these were Blériot's and Henry Farman's. The now famous Nieuports, Deperdussins, and Breguets had not at that time been evolved. Since then, ideas have been consolidated, fanciful notions have been worked out to exhaustion, and we have settled down to two main types, the monoplane and the biplane. Discussion, long and sometimes heated, has raged round the respective merits of each. Perhaps the monoplane has, so far, had the best of the argument. It is at any rate the more popular type with the general public, and to the eye, it looks a much more natural flier. My own humble opinion is that the biplane is on many counts the equal of the monoplane and, on some, distinctly superior. I will give reasons for this statement later on when discussing the essential and desirable qualities of a machine for military reconnaissance.

It is possible for the private individual to purchase an

**Initial cost and maintenance.**

aeroplane, complete with engine, for less than £600, while for £1,000 most of the machines on the market will be within his reach. His

expenses, however, do not cease at this figure. The machine has to be housed in a shed of considerable proportions. It requires a



well trained mechanic to look after it, and much employment can be found for another though less skilled hand. At the same time a very large proportion of spare parts must be purchased. Aeroplanes are fragile things, and are constantly asked to endure much greater hardships than they are capable of. Few people arrive at the stage of cross-country flying without doing more or less serious damage to the machine in the course of learning. I do not wish to be understood as enumerating these items with the object of discouraging private enterprise, but people who contemplate the possession of their own machine should have some previous idea of their liabilities.

It is invariably due, in the first instance, to private enterprise that any new movement or industry receives Government support or recognition. It must by now be well known that the aeroplane industry at home has been struggling from hand-to-mouth ever since its inception, and you are perhaps aware of the clamour for such recognition and support which has continued for nearly two years in the technical press. The reason why it has so far been withheld is due, primarily, to lack of private enterprise. The general apathy and indifference of the public at home towards aeronautics would astonish those who have been away from the country for the last few years. Flying has not been keenly taken up by the young man of leisure and means. This class of person was in great measure responsible for the rapid development and improvement of the motor car some ten years ago. "Here's a new toy, let's buy one." The demand was consequently assured, and was for many years greater than the supply, thus putting the manufacturers into the blissful position of having more work than they could undertake. The profitable disposal of their output was a certainty, and fancy prices were the order of the day.

The reverse is the case in the aeroplane industry. "Here is a new toy, but don't let's buy one." The only people who learn to fly are sailors, soldiers, and certain mechanics and others directly and financially interested in the industry. The two former learn because they realise the immense possibilities in naval and military aeronautics, and the mechanics, because they seek employment in an aeroplane factory where the possession of a pilot aviator's certificate is a powerful asset. But few sailors and soldiers can afford to own machines privately, while mechanics of course have no intention of doing so, because, if they are pilot-instructors, which is what they want to become, they will get as much flying on their employer's machines as they want. Thus, there being no private enterprise, the demand for machines simply does not exist. All that the manufacturing firms are now looking forward to is the placing with them of large orders by the Admiralty and War Office. It is not necessary here to describe the degree of patience with which firms have been waiting for these orders. We are very fortunately past that stage now. We are taking up the matter in earnest and the Home Government is beginning to purchase

machines. Let us hope it will save many firms who have been struggling for months past on the verge of bankruptcy. It is obvious that foreign supplies will be closed to us in time of war, and as it is not the policy of Government to manufacture machines, we must have firms in the country with plenty of capital and resources in order to turn out the large numbers that will be required. Incidentally, our present most urgent need is a reliable engine. When we go to war, our supply of Gnômes, Renaults, Clergetts, Anzanis and the rest will perforce be restricted to those in the country, and they won't be nearly enough. If the *Daily Mail* would put up yet one more handsome prize for an all-British aero-motor that would carry out a test proportional in severity to the amount of the reward, it would be doing a greater national service than ever before.

But for the invention and subsequent general adoption of the

#### **Engines.**

internal combustion engine for motor cars, which themselves have really only come into general use within the last eight years, we should still be as far from the complete solution of mechanical flight as we were fifty years ago. As has already been shown, men have been working on the problem for centuries and, for sheer lack of a power-plant of sufficient motive force, lightness, and compactness, were never able to get beyond the stage of what we now call the glider. In 1912, however, we have this power-plant in the shape of the modern aero-motor. The problem has been the reduction of weight with the maintenance of power. This has only been made possible by the production of high grade steels and other metals which a few years ago were unheard of. The result is that to-day the lightest reliable aero-motor develops no less than one horse-power for just over 3lbs. in weight of the material of which it is constructed. That is to say, the complete engine of 45 h.-p. weighs just over 150lbs. and but few aero-motors—even water-cooled—now weigh more than 10lbs. per horse-power.

What we are striving for, and are very gradually succeeding to, is reliability. For the present purpose we have got our engine of sufficient lightness, but we are far from being able to say that once it is started it will continue to run and maintain its full power till its fuel tanks are empty. In a great measure this want of reliability is due to the cutting down of weights to the finest possible limits compatible with safety. But in addition to the necessity for lightness must be taken into consideration the conditions under which the aero-engine is required to work. These are just about as arduous as can be imagined. In direct contrast to the road car, the aero-motor has to run 'all out', i.e., it has to put forth its utmost power from the time it leaves the ground till the flight is concluded. Here then are excellent opportunities for over-heating and all its attendant troubles, to say nothing of the strain and wear and tear of working parts at this high pressure. In addition, it must be remembered that from the nature of the case, the engine is bolted to a very light frame frequently and of necessity consisting of wooden struts braced

with wire, so that vibration is excessive. It is a platitude that if you want to make your 30 h. p. car last, never ask it to put forth more than 20 h. p. The same applies in theory to the aero-motor, only unfortunately in practice, your 50 h.-p. aeroplane, if only exerting 35 h. p. may possibly just lift from the ground, but will certainly be unable to attain any height. The question of weight is so important that we cannot yet spare the extra number of pounds which, if put into the engine, would give us either increased reliability or flexibility of speed, such as we have in the road car.

Air-cooled and water-cooled engines each have their advantages and disadvantages. The former are more liable to troubles from overheating, but are lighter, or, expressed in another way, produce more power for a given weight. Also they present less head resistance to the wind, an all important factor, since they have no large radiating surfaces to be exposed. Water-cooled engines are of necessity heavier, and their radiators offer considerable resistance in flight, with consequent decrease in the general efficiency of the machine. On the other hand they are less liable to cease work from overheating.

There is one engine which is considered by many to be better than all others. It is the French "Gnome" designed by M. Séguin. It is air-cooled, and, for its horse-power, is the lightest but one on the market. With it have been performed the majority of records in distance, duration, and altitude. Its construction is unique and most ingeniously carried out, and deserves a short description. It is made in four\* sizes, 50, 70, 100 and 140 h. p. The 100 and 140 h. p. are practically two fifties or two seventies coupled together. The 50 and 70 are 7-cylindere. Cylinders are bolted radially to a central crank chamber. Exhaust valves in cylinder heads. Inlet valves in pistons. The cam box operating the exhaust valve rods is situated in one of the cover plates of the crank chamber. Inlet valves open by suction and are kept closed on the other three strokes by ingeniously contrived balance weights. The crank shaft is stationary and the seven cylinders and crank chamber revolve round it, the propeller being direct-coupled to the latter. The motor is lubricated with castor oil, which it consumes in large quantities and ejects straight into the air from the exhaust valves. From the nature of the case, this cannot be collected and used again, as is possible with non-rotary motors. The carburettor is a very crude device and wasteful of petrol. It is gravity-fed and consists simply of a jet through which the fuel is sucked by a short pipe into the hollow crank shaft and from there into the cylinders. Richness of mixture is controlled, not by adjusting the amount of air admitted past the jet, but by opening or closing the direct supply from the tank to the jet itself. The number of revolutions are 1,100, at which rate it develops 45 h. p. It will be seen that the cooling of each cylinder is about as efficient as it could be, in that it is not only working in the draught of the speed of the machine itself, but also in the draught created by its own revolutions. The

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\* Since these notes were compiled an 80 h. p. "Gnome" has been put on the market.

50 and 100 h. p. of this make have proved themselves to be practically free from over-heating troubles. When the 70 h. p. was produced, many doubts were cast at the possibility of efficiently cooling such large cylinders by air, and the first of these engines were undoubtedly not so satisfactory from this point of view as the 50 h. p. Latterly, however, they have been immensely improved. Imitation is the sincerest form of flattery, and there is already one firm which is making just as near a copy of the Gnome as is possible without infringing patents. Doubtless others will follow.

There is one serious disadvantage inherent in all rotary motors of which the Gnome is, *par excellence*, the outstanding type. This is gyroscopic force. The Gnome 50 h. p., under normal working conditions, weighs 170lbs. and makes 1,100 complete revolutions per minute. Consider this as a fly-wheel, and you have a large top of considerable weight revolving with extreme rapidity. In other words, a powerful gyroscope. There is no time to go into its action in any detail, but most interesting experiments can be carried out with the child's gyroscopic top, and will give one some idea of the force to be reckoned with. If the top is spun in a counter-clockwise direction, and one end is grasped in the hand with the axis of the top held horizontally, and the wrist is then deflected suddenly to the left, the top will tend to be deflected vertically, the free end pointing downwards. The opposite is the effect if the top be deflected to the right. The reverse takes place if the top be spun in a clockwise direction. Now, apply this to the Gnome-engined aeroplane and, for sake of example, let us take the case of an engine-behind biplane, such as the Henry Farman. The engine, looking at it from aft, revolves counter-clockwise. When the pilot turns to the left, the distinct tendency of the machine is to dive also, and in order not to lose altitude, this has to be corrected by the elevator. When turning to the right the machine tends to rise, and on performing a sharp turn it is necessary to jamb the elevator hard down to prevent the machine from climbing at such an angle that it slips back vertically and becomes uncontrollable. When using a rotary motor one is constantly reminded of this gyroscopic force whenever one commences a turn in either direction out of the straight. When diving and climbing the machine will similarly want to turn to the right and left, but this is not so marked in effect as the operations are not so sudden and take place over a longer radius. This force is of course absent in non-rotary motors, but it must not be forgotten that the propellor itself is a gyroscope. It is too light to have any practical significance, yet it may be of interest to mention that the tips of an 8-foot propellor at 1,100 revolutions per minute, are travelling through the air at approximately 320 miles per hour. In spite of this undoubtedly disturbing force, the Gnome, on account of its other excellences, is the most widely used engine of to-day. On the other hand, it is very generally recognised that it is not the type that has come to stay. The ultimate perfected aero-engine can hardly be expected to be of the rotary type.

It seems a surprising statement to make, yet it is nevertheless correct to say that there are still numbers of people who look upon the aeroplane as a dangerous toy. They are quite unconvinced of its practical utility for naval, military, or any other purposes, and this in spite of published and authenticated records of its performances. **The limitations of mechanical flight.** The convincing of those unwilling to believe is always a difficult matter, so in discussing very shortly the technical and mechanical limitations of flight, I would speak to those who realise what has been done already and who, like myself, are hopeful of future development far in excess of what has up to now been achieved.

Given a reliable engine, the length of a cross-country flight is obviously limited by the supply of fuel and oil that can be carried by the machine. Starting with full tanks, distances of over 200 miles are now frequently covered without making a landing to replenish. For military purposes, and particularly for strategical reconnaissance, it is most important that fuel capacity should be as large as possible, seeing that one is not likely to be allowed to land to procure petrol and oil in a hostile country.

With regard to weather. At present, conditions such as a gale, snow, or heavy rain would render successful reconnaissance a matter of extreme difficulty. Skilled pilots can now fly with seeming ease in winds up to 35 miles per hour, but in a naval or military Flying Corps those who have not attained the same degree of perfection in the art will often be called on to work under conditions which can only just be faced with confidence by the experts. The subject will be referred to again later, but it is convenient here to state that in war, pilots will have to fly whatever the state of the weather. That they will be prepared to take these risks there can be no shadow of doubt, but it means with equal certainty that the proportion of spare pilots and machines will have to be very large.

A great disadvantage in the modern aeroplane is the weakness of its under-carriage. It has of necessity to be lightly constructed, and is usually just sufficiently strong to withstand the shock of a skilful landing. As often as not, when this is clumsily performed, damage more or less serious results. By far the greater percentage of accidents occur at the moment of touching earth. I have already stated that a machine attains its flying speed just at the moment of leaving ground. Now, on returning to earth, this speed will certainly not be less and may often be greater, particularly when descending at a steep angle necessitated by a limited choice of ground.

One of the most important features of an aeroplane required for long distance strategical reconnaissance is that of speed. Suppose this machine to be capable of flying at 70 miles an hour,—nothing out of the way. Before it can take the air, it has to roll along the ground at speeds varying from rest to 70 miles an hour. Even over smooth ground, with pilot, observer, and full tanks, it will not attain this speed in less than 70 to 100 yards, and more, if the ground is rough and uneven. For some considerable distance ahead, the ground

must be free from hedges, trees, houses and other obstructions to enable the machine to get well clear. This will give some idea of the ground required for starting from. For landing, such a large open area is not essential as the descent can be made steep to avoid obstacles. A landing-place, however, must always be chosen with regard to its facilities for leaving it again.

One of the great deterrents to the development of excessive speed is this question of starting and landing. All designers agree that we could fly at 130 miles an hour and more, once the machine was in the air, were it not for the difficulty of constructing an under-carriage that would hold together when rolling at this speed over the ground.

Aeroplanes then are chiefly limited in their activities by the amount of their fuel capacity; by rough weather; by their inability to land without damage on very uneven surfaces; and by the amount of clear ground they require when taking the air.

Also it seems hardly necessary to remark that in the event of engine failure, the aeroplane, unlike the dirigible, has got to come down.

In flying across country there is the ever-present possibility of the engine stopping and refusing to perform another revolution till it has been overhauled. Needless to say, this cannot be done on an aeroplane in mid air. In the case of a dirigible, matters are different and minor adjustments and repairs can be carried out while floating. As I have just said, the aeroplane pilot who finds himself in the air with a motor that has ceased work, has got to come down. There is nothing in itself disconcerting in this, provided he happens at the time to be passing over open country. The usual method of landing is, in fact, to switch off the ignition and glide to earth with a lifeless engine. Unfortunately it is the exception rather than the rule to be flying over country where a safe landing can be made in every direction. What the pilot can and does do, however, is to increase his chances of finding a clear spot by flying high. Suppose an aeroplane to possess a gliding angle of 1 in 6, and suppose this machine to be at a height of 3,000 feet when the motor fails. Theoretically the pilot, if he wishes, can, by maintaining the machine at its gliding angle, bring it to earth 18,000 feet or nearly  $3\frac{1}{2}$  miles from a point on the ground vertically below where the engine gave out, and this in any direction. Now I haven't worked out how many square miles of country are contained in a circle of  $3\frac{1}{2}$  miles radius, but it will be an extreme misfortune if in this patch there are not a few square yards of suitable landing ground. I use the word "theoretically" with regard to descent at a machine's true gliding angle, because in practice it is dangerous to come down too "flat" lest the tail of the machine get low and it commence to lose way and finally to fall tail first to earth. For this reason it should always be remembered that, within reasonable limits, it is far safer to come down rapidly and at

an angle much greater than the normal gliding angle. Of course this limits choice of landing ground, but I have shown that the higher one flies, the greater the choice. No cross-country flight should therefore be undertaken at a height of less than 1,500 feet, and, within limits, the higher one flies, the better. The wind at any considerable height, though perhaps travelling faster from one compass point to another, is undoubtedly freer from *remous*, both of the heat and the land variety.

While talking of gliding angles, it may be well to explain the meaning, or at any rate that generally accepted, of the two French terms *vol plané* and *vol piqué*. Not being versed in this excellent language, I am unable to say if the meanings I am about to give are literally correct, but they are undoubtedly those accepted by every English-speaking aviator and have long since passed into his vocabulary of technical terms. To these he has added another which he calls 'vol pancake,' and it is a much more serious thing than either of the other two. *Vol plané* then means an aeroplane descent at the normal gliding angle of the machine. Engine of course switched off. One might perhaps call it a planing to earth as opposed to a dive to earth which is what *vol piqué* means. It is not advisable to go too close to the limits of either. In each case, if they are exceeded, the machine becomes uncontrollable. 'Vol pancake' almost explains itself. It is the act performed by the unskilful aviator who, in landing, underestimates his height from the ground and brings his machine from a steep angle to the horizontal some feet before he ought to do so. He has no time to correct the error, the machine rapidly loses forward way and descends to earth nearly vertically on an even keel. It must have been at this stage of the proceedings that it reminded a facetious onlooker of a pancake being tossed in a frying pan, and the expression was adopted forthwith. In most cases a landing of this description means damage to machine. Usually the undercarriage crumples up, accompanied by much noise of breaking wood. The propeller splinters and the machine comes to rest on its main planes. The pilot usually escapes, as there is but little tendency for him to be flung forward. Landing *à la* 'vol pancake' is, however, sometimes the only way. Should a pilot be so unfortunate as to find himself over a dense forest with a failing engine, he could not do better than to alight as flatly as possible on the tops of the trees and trust that his main planes will hold. I understand that this is the normal method whereby hydro-aeroplanes alight on the water. Certainly there is no better way for an aeroplane not fitted with floats.

Perhaps a further proof, if one were needed, of the importance of flying as an asset to military operations,

#### Maps.

is furnished by the fact that the French and Germans have gone so far as to produce special maps for use with aircraft.

Of course the best method of finding one's way across country is by means of a map. The only other way, by compass, is not easy

of accomplishment, particularly if the wind is in any quarter other than right ahead or right astern, as it is difficult to allow for the inevitable drift with any degree of accuracy.

Maps of most civilised countries are readily procurable, and it may be taken for granted that, were we to go to war, these would be available. There is much diversity of opinion regarding the most suitable scale to use, but all are in agreement on one point, which is that the higher one flies, the easier it is to find and keep position on the map. Firstly, because one has a greater horizon and does not appear to be coming up with objects so rapidly as when flying low; secondly, because the higher one flies, the more does the country beneath, owing to the greater distance from which it is viewed, resemble the map. These reasons are self-evident and require no further explanation.

Personally, in default of a special aeroplane map, I am of opinion that the most satisfactory scale to work with is an inch to a mile. It seems enormous. It means that in a short cross-country journey of 60 miles one must carry, on rollers, 5 feet of map. The English Ordnance Survey maps of this scale show just as much detail as is required and not more. They are extremely accurate, except in one important detail which is in no way the fault of the surveyors. They show practically every road, main and subsidiary, that exists, and this is of the utmost importance. At 3,000 feet a subsidiary road looks like a main road, so that the only way of finding position by their means is to note carefully, first on the ground, the angles at which they join into or branch off from each other, and then to compare these with the map. Now if one is working with a map whose scale is too small to admit of all the roads being shown, it is obvious that one is liable to mistake a subsidiary road on the ground for a main road on the map. The mistake is not at once perceived, and one may have flown several miles out of one's course before it is realized. It is then usually more by good luck than anything else that one is able to find the way back into the true course. If one is hopelessly at sea, the only thing to do is to descend and ask. The advisability of this procedure in war in a hostile country is highly questionable, and at once provides an invincible argument for the necessity of specially produced maps for use with aircraft.

I mentioned a point on which the ordnance survey maps were not accurate. This is in the shape and extent of woods and copses. It is plain that any map, unless kept absolutely up to date, must fail in this respect. Since the making of a map large areas of wood and forest may be cut down and the ground turned into grass or cultivation. Conversely, a wood or copse may, in a very few years' time, grow up on land which was clear when the map was made.

In cross-country flying there are certain features which stand out clearly and catch the eye of the pilot, and it is these which must have the first consideration in the production of special maps. They must be boldly depicted so that they are at once appreciated for what they are. Most of them are already shown on the majority



of maps, but what we want brought into greater prominence in addition to railways, roads, rivers, etc., are churches, towers, wind-mills, large public buildings, factory chimneys and the like. Also dangerous landing grounds which are not readily recognisable as such from aloft. Ridge and furrow land, for example, which at any height looks as flat as a polo ground. Ultimately, as they increase in numbers, as they undoubtedly will, all over the country, aeroplane and dirigible hangars will have to be prominently shown, as well as repairing and fuel supply stations.

A few aeroplane ascents have been made by night, but the difficulties of finding the way across country under this condition are multiplied ten-fold.

**Flying at night.** If aerial reconnaissance is to be carried out by night, it will presumably, for the present at all events, be undertaken by dirigibles. These are far more suited to the purpose and by the reason of their hovering capabilities are likely to obtain much more valuable information.

I will not presume to air before you my views regarding the effect which aircraft will have in the immediate future on strategy and tactics. This can be done best by those who have specialised in the subject. They need not possess the detailed knowledge of aeronautics which comes to the pilot. All that is necessary to know are certain hard-and-fast principles which are embodied in a general idea of what is possible and what is otherwise.

What I propose to consider, are the means we have at our disposal for long-distance reconnaissance, aerial inter-communication, and the rest.

Here I would like at once to dispel the illusion that aircraft are going to supersede or in any way relieve the cavalry from its reconnaissance and other allied duties. A moment's consideration of the subject must be convincing even to those most enthusiastic about the possibilities of the aeroplane and dirigible. I need but give one example. Imagine two opposed armies, one making the widest use of its cavalry, the other relying on its aeroplanes for information. Suppose, in the inevitable aerial battle, the aeroplanes of the former obtain the supremacy. What is there to prevent their cavalry from coming right up to the position of the other force? So far are we from the possibility of a curtailment of the duties assigned to the cavalry in strategical reconnaissance that it is reasonable to suppose the zone of its activities will be flung wider than ever in order to increase the effective radius of action of aircraft.

It is now universally recognised that beyond all others, long-distance strategical reconnaissance is the rôle of the aeroplane. I will here briefly enumerate the special features it is necessary to embody in a machine for this purpose. It must have a very wide radius of action, something over 200 miles. That is, it should be capable of remaining in the air for the time it will take to cover 400 miles, for reconnaissance will not only be confined to country beneath

a bee-line out and home, but may also have to include the ground to right and left. As wide apart in fact as are the flanks of the enemy.

Its primary object is to gain information and, in order to return with that information, it must avoid encountering hostile aeroplanes which will be out with the express object of preventing its return. Since, therefore, it has long distances to cover, and since it is more urgent for it to run back with its information than to stop and fight, it must be speedy.

Next in importance is the extent of view obtainable. The degree to which one can observe the country over which one is passing varies greatly according to type of machine. Speaking generally, biplanes afford a better view than monoplanes. The machine affording the greatest facilities in this respect is undoubtedly the Henry Farman biplane, from the driving seat of which a virtually unobstructed view straight ahead and vertically below is obtained without undue straining. This type, however, would be far too slow for the purpose. In a monoplane the engine and propeller are situated in front and the pilot sits some feet in rear of the entering edge of the planes. He can of course see ahead and down, but only at an angle, and even then the propeller partly obstructs the view. If he is to see vertically downwards a portion of the planes immediately adjoining the fuselage must either be cut away or the fabric replaced with celluloid or other transparent substance.

Provided the prime quality of speed is not sacrificed, and it can be done without decreasing the amount of fuel carried, it is desirable that the pilot and the vitals of the machine be protected with some light armour.

Since the aeroplane will have to travel long distances the pilot should be freed as far as possible from undue physical fatigue and the machine should be nicely balanced and light on controls.

The feature of silence is desirable but not essential. Machines cannot at present be made invisible and are seen for many miles before they are heard.

Strategical reconnaissance differs from tactical reconnaissance in that the commander by whose orders the former is undertaken only requires to know the general disposition of the hostile forces. That is, the location of the main masses of the enemy's troops, their lines of communication, their probable lines of advance, their supply depôts, etc. It is only in tactical reconnaissance that accurate information of dispositions in detail is essential. Therefore the pilot on strategical reconnaissance can carry in his head the amount of information it is required to gain. If he is a really skilful flier he can plot down on his map the positions of the enemy's massed troops, but he will be unable to make lengthy notes.

Therefore, although it is desirable for purposes of greater accuracy to carry an observer, yet it is not essential as in the case of tactical reconnaissance. This means that the machine can be a single-seater, and a single-seater for a given engine-power will be a

speedier machine than a two-seater. Or, the weight of the discarded observer can be placed to the credit of fuel capacity.

To sum up, an aeroplane for strategical reconnaissance must have speed, wide radius of action, and a clear view. And it will be better if it can have, in addition, protection for pilot and vitals, ease of manipulation, and silence.

I have shown the essential and desirable features of a machine for strategical reconnaissance. For tactical reconnaissance do we want all or any of these, and are there others which it should possess in addition?

Tactical reconnaissance may be expected to be carried out somewhat on the following lines:—The commander of the aeroplane squadron or squadrons, who will always be kept fully informed of the intentions of the general officer commanding, will receive orders from time to time to reconnoitre certain portions of the enemy's positions. The distance out and home will not be great, and for tactical reconnaissance, therefore, a machine will not be required to cover long distances.

A clear view is of course essential, and here we come to the main difference between the two types of machine. The amount of information to be obtained in tactical reconnaissance is a great deal more than the pilot can carry in his head. Since detail and extreme accuracy are the requirements, it is necessary that the machine carry an observer in addition to the pilot. The latter is then free for the complete control of the machine and the observer is unhampered and confines his attentions to the country, his notes, maps, etc.

In addition, the machine should be protected by some kind of light armour, and it is desirable that the observer should be able to handle some shooting weapon.

The question of providing aeroplanes with some weapon of offence has yet to be thought out. The necessity is obvious, but the problem has not yet been seriously tackled, and I am unaware of any deliberate experiments, such as shooting at small captive balloons from aeroplanes having been carried out. A report, however, is to hand of a sportsman who went out to shoot rabbits from the passenger seat of a Henry Farman biplane.

The value of aeroplanes for inter-communication can hardly be

**Inter-communication.** over-estimated. Its essential advantage is speed, and, in all seriousness, certainly

may now be added thereto. The method of conveying orders which is least fruitful of errors and misunderstanding is by the word of mouth of a staff officer who thoroughly appreciates the situation. Aeroplanes will be largely utilised for conveying such officers from flank to flank and from front to rear, whether on the battle-field itself or at any stage of the previous concentration. If an army commander wishes to discuss a situation in person with, say, one of his divisional commanders, the latter will most expeditiously be brought to head-quarters by aeroplane and as quickly conveyed back to his command, thus saving much valuable time. It is advisable, as far as

possible, not to multiply types. We want a passenger-carrier for inter-communication. A machine possessing the same features as we require for tactical reconnaissance will, therefore, suffice for this purpose also.

The performance of bomb-dropping sounds highly attractive but won't stand much critical examination

#### **Bomb-dropping.**

although even the technical press has had many lengthy articles setting forth the frightful havoc, devastation, and demoralisation that a 100lb. bomb will work when let off from 1,500 feet. Weights of 100lbs. have certainly been dropped from aeroplanes without in any way affecting the stability of the machine, but let us consider on what occasions we should want to drop bombs. I am speaking of war against a civilised enemy. It is clear that a shell of these proportions, if dropped and exploded in the centre of a battalion of infantry in quarter column, would create great devastation. But were the enemy, as presumably he would be, aware that his opponent contemplated bomb-dropping, is it likely that his battalions would be found in this or any other close formation? The same applies to all arms. Next we come to the possibility of destroying bridges and other works by this means. To destroy a bridge, whether of masonry or of iron, the charge has to be carefully laid in a particular manner in a particular spot in that bridge, usually on the under side of the road. Can the pilot, travelling at anything over 50 miles per hour, even cause his bomb to hit any particular spot on a bridge? No. Therefore, if he accomplishes what he sets out to do, it will be by an extraordinary piece of good fortune.

It is another matter when we come to consider arsenals, dock-yards, supply depôts and the like, but serious damage can in this case only be caused by the subsequent fire which the explosion of the shell might create, and presumably fire-fighting appliances form part of the equipment of these.

The French are known to have carried out highly successful

#### **Observation of Artillery fire.**

experiments in the observation and direction of artillery fire from aeroplanes. The advantages of this method applied to indirect fire do not require to be pointed out. I am almost afraid of repeating the good old obvious truth, namely, that the observer in an aeroplane can see what is going on on the other side of the hill.

With regard to the question of imparting information gained, I have hitherto supposed that in each case the aeroplane returns to headquarters and deposits the pilot to hand in and, if necessary, to discuss, his report in person.

It stands to reason that if valuable time can be saved by signalling the information back by wireless, visual, or other means, this should be attempted.

#### **Methods of imparting information gained.**

It will be of interest, therefore, to enquire into the means we have of doing this, and whether time really can be saved. The first method that occurs to one is wireless telegraphy. As originally made, an aeroplane wireless apparatus weighed 70lbs.,

but I believe this has since been considerably reduced. Difficulties of course arise in receiving signals from earth on account of the noise of the engine and propeller, and the wind whistling through wires and struts.

By using wireless, can we really save valuable time in getting information to its destination? Field pack wireless equipment has a normal range of 40 miles. Waggon equipment has a normal radius of 150 miles over ordinary country. From the time of commencing to set up, it takes, under service conditions, about half an hour to get into communication and it can receive and send at the rate of 8 to 10 words per minute. Suppose an aeroplane on starting to carry out a strategical reconnaissance is told that it will be communicated with by wireless during some period of its outward and homeward journey. Since the limit of its own range is, say, 40 miles, it will presumably be on the homeward journey that communication is established. Now the machine will fly 40 miles in 30 minutes; it is therefore reasonable to suppose that it would arrive at its destination at least at the same time as, if not before, the transmitted message. Some experiments in visual signalling have been conducted, such as code signalling with flags. Quite recently a device for sending by Morse has made its appearance. It consists of a box containing dry soot or lamp-black from which issues a pipe leading aft and below the fuselage. When air is forced into this chamber a certain amount of lamp-black is ejected down the pipe and out into the open air. The length of time during which this smoke-stream is in operation is controlled by the sender and by this means he gets the long and short jets corresponding to the dash and dot of the Morse code.

Wireless telephony is now in its infancy. Its superiority over Morse signalling is so obvious that it needs no explanation. Wireless telephone messages have been despatched and received over a distance of 2 miles, and there is every reason to hope that this will be increased in the near future.

At one time France placed all her faith in the dirigible, and her airships were far more efficient and ahead in every way than those of Germany.

**Aeroplanes on the Continent.**

It is a mistake to suppose that she has now swung to the other extreme and abandoned this type in favour of the aeroplane. She is spending considerable sums on dirigibles and has no intention of discarding them. What has actually happened is that some finality has been arrived at regarding the special purposes for which the two types are suited. Most of her strength in dirigibles is disposed along the northern and eastern frontier. Of course she has many large military aeroplane stations similarly situated, but she has equal numbers in the interior. Some idea of the importance she attaches to military aeronautics may be gathered from the fact that, adding public subscription to the budget allotment, she will have spent over a million sterling by the end of the next financial year.

Information as to the doings of Germany in this respect is not easily obtainable. Like France, she pinned her faith at first to the dirigible and held thereto with much greater tenacity. She is now, however, rapidly overtaking her rival in the matter of aeroplane construction. Prince Henry of Prussia, the Kaiser's brother, himself an aeroplane pilot, was at the head of a commission appointed to enquire into the subject generally, and in his report, made some months ago now, he urged the immediate expenditure of 2½ millions sterling.

Within the last twelve months, Russia has become extremely active, and since she never does things by halves we may shortly expect astonishing developments in this quarter.

Italy is fortunate in being the first nation to have experience of aircraft in war; but little can be said of this while operations are still in progress. Newspaper accounts are sometimes exaggerated, and it is best not to arrive at conclusions till the official report, if obtainable, is published. It should not be forgotten that in this war Italy is in the advantageous position of having no aerial fleet opposed to her.

At home, the Balloon School ceased to exist on the 31st March 1911. A reorganization, which it is correct to ascribe to the advent of the aeroplane and the dirigible, took place, and the late Air Battalion, R. E., was constituted and came into being on the 1st April of that year. It slowly but surely became patent that this could not be expanded sufficiently to meet requirements, and a further reorganization resulted in the establishment of the present Royal Flying Corps, dating from the 14th May 1912. This time the organization is essentially capable of wide expansion.

The Royal Flying Corps consists of the Central Flying School, the Naval Wing, the Military Wing, and the Royal Aircraft Factory. The Central Flying School, now in the course of erection, is situated at Upavon, Salisbury Plain, on land purchased for £90,000. At present its resources will render it capable of passing out over 160 trained fliers per annum. There will be three courses in each year. Naval as well as military officers, non-commissioned officers, selected men, and civilians will undergo this course.

The Military Wing is at present to consist of Headquarters, 7 aeroplane squadrons of 12 aeroplanes each, and one airship and kite squadron providing 2 airships and 2 flights of kites. Total present requirements for the 7 aeroplane squadrons are 182 officer pilots and 182 of other ranks. Fliers before appointment to the Military Wing will have to pass out from the Central Flying School. All ranks in the Royal Flying Corps are open to civilians. Already there is one nucleus squadron at Farnborough and another on Salisbury Plain.

The chief functions of the Royal Aircraft Factory are the higher training of mechanics for the Royal Flying Corps, repairs and reconstruction, engine and aeroplane tests, and experimental work generally.

In considering the questions that arise in connection with military aeronautics in India, the first that occurs to one is that of climate and weather.

**India and military aeronautics.** I have lately come across the following paragraph in the issue of *Flight* for 25th May:—

“For the second time Lieutenants Lafague and Reimbert have made a journey between Biskra and Touggourt, across the Sahara Desert. They intended to continue their journey, but the *remous* caused by the intense heat were so trouble-some that they decided to wait for cooler weather.”

Presumably it was subsequent to the 1st May that they found the atmosphere in this disturbed state.

I have explained the conditions constituting rough weather from the pilot's point of view, and we must unfortunately admit that during certain months in the year, these conditions will be prevalent in India. A combination of extensive dry plains and a hot sun are far from creating ideal circumstances. But having said this, there is little else to cavil at. The climate, whatever its temperature, is infinitely more settled. In Europe generally, and in England in particular, we cannot say to-day that weather conditions will admit of our flying this day week. In India, however, it is practically possible to say with certainty what the conditions will be like this day two months. Variations of course occur, but not in such rapid succession as at home. This alone is an advantage over home conditions which we should do well to appreciate fully.

It has been stated that the delicate wood-work of aeroplanes is likely to suffer much from variations of temperature in this climate. I am inclined to think the danger of this has been exaggerated. Well seasoned wood will stand a deal of hard usage in this respect, and it is practically only liable to damage by insects, which, with proper precautions, can easily be defeated. Moreover, it is practically certain that the aeroplane of the near future will be an all-metal construction, even down to the planes, which will be of thin sheet aluminium, thus rendering it proof against weather, temperature, and insects.

Aeroplanes have proved their indispensability to modern armies. England is admittedly behind hand in providing herself with a Flying Corps of a size adequate to her needs. Those who do not admit this, use as one of their arguments the somewhat ancient one of the protecting strip of water between ourselves and the continent, and persistently ignore the fact that this strip can now no longer be called protecting. We are, however, making a real move this year. In establishing and organizing the Royal Flying Corps the necessity for its wide and rapid expansion in the future has been constantly before the minds of those responsible for its creation. It is obvious that in its present state it does not meet our requirements, but we may at least have confidence in its very shortly being able to supply our home needs.

Can the Army in India dispense with this adjunct to its efficiency? Surely not. I have frequently seen people shake their heads at the possibility of flying over the rugged and precipitous country comprising our North-West Frontier, but although obvious difficulties are to be contended with, I will not admit of its impossibility. Besides, are our aeroplanes, when we get them, to be confined to the limits of the North-West Frontier? Will they never be required in the future on the broad plains beyond? Perhaps at the present moment it looks less like it than ever before, but how do we know that this state of affairs is to continue for ever? We must at least be prepared for eventualities. Should we ever have the misfortune of a large internal disturbance to contend with, it is difficult to see the case wherein the aeroplane will not be of the utmost service.

I have, I trust, given sufficient instances to carry conviction in the necessity of India having its Flying Corps and having it without delay. Since their use is not to be limited to any particular locality, our requirements in aircraft will be large.

At the conclusion, the CHAIRMAN thanked the lecturer for his very interesting and instructive lecture. He said that, speaking as Commander-in-Chief, he was sure that the absolute necessity of providing aeroplanes for the army in India had been conclusively established. Financial considerations had prevented the co-operation of that army with their brothers-in-arms on the continent in the study and practice of aeronautics in their elemental and experimental stage. Now, however, that the practical utility and, indeed, indispensability of aeroplanes had been demonstrated not only at manœuvres on the continent, but also on actual battle-fields in North Africa, India could no longer lag behind. The services of security and reconnaissance in modern warfare could nowadays only be adequately carried out if commanders were assisted by aerial squadrons.

France and Germany might not agree in their views upon the evolution of strategy and grand tactics, but early and accurate information was more than ever a vital factor in determining the issue of a battle. His Excellency concluded his remarks by saying he was sure that the Viceroy, who had honoured them by his presence at the lecture that afternoon, would graciously assist him in impressing upon their colleagues in Council the importance of lending in this matter a certain elasticity to their very rigid financial conscience, and would urge the paramount necessity of inaugurating in India a Flying Corps similar to that which had been recently created at home.





## OCHTERLONY'S CAMPAIGN IN THE SIMLA HILLS—SOME FURTHER NOTES ON.

BY COLONEL W. G. HAMILTON, D.S.O.

To the curious in such matters some further notes on various points connected with this campaign (see April Number of this Journal) may perhaps be of interest.

As regards authorities. Besides the official correspondence and despatches previously adverted to, which must form the basis of any reasoned account of the Nepal war, the following publications, approximately contemporaneous, have been found useful in amplifying and explaining official reports in some respects:—

*“Military sketches of the Gurkha war in India in the years 1814-1815-1816,”* published 1822. A small volume of 67 pages only, including an “Introduction,” which deals only with the forces commanded by Ochterlony in person, in 1814-15 and in 1816. The information therein contained has reference rather to details of fighting than to operations in general. The pamphlet was ostensibly written with an eye to a projected re-organization of the Bengal army, and with the object of showing the unreliability of native soldiers when not commanded by a large proportion of British officers and non-commissioned officers. Hence, though it is sufficiently obvious even from official correspondence that the sepoys showed the white feather at times, the narrative dwells somewhat disproportionately upon the shortcomings of the native soldiery in action. Without claiming that they were heroes, it must at least be admitted that Ochterlony's successes could not have been achieved without a considerable measure of good qualities in the troops he commanded. The following are specimens of the author's opinion:—  
“A native soldier of whatever rank has no heroism, and he is ignorant of honour in every acceptance of the word,”—“The physical mass of the army bent or broke like a useless weapon whenever a blow was to be struck”—and thence he deduces that the addition of Europeans to native regiments is indispensable—the proportion of British officers employed with their corps in the Nepal war being as one to a hundred native ranks.

The book is anonymous, but the author, who from internal evidence personally accompanied Ochterlony, records only those events of which he was an eye witness, or concerning which he obtained authentic information on the spot, and he mentions that he witnessed the transactions “without sharing in their dangers or their glory.” He does not hope for concealment of his identity, and since his statements on certain details of a minor engagement were unreservedly accepted in 1825 by Prinsep (see later) as even better authority than the official records, the author was evidently well

known and recognised as a competent authority on such points. Assuming, therefore, that he may have been an officer on Ochterlony's staff, the author was perhaps Captain Edmund Cartwright, the only one of Ochterlony's staff in 1814-15 who accompanied the General in the final campaign of 1816. In the first phase, he was his major of brigade, in the second his secretary.

This account then is valuable as throwing certain side lights upon events, and especially as illustrative of the nature of the fighting. The author's description of a Gurkha charge—a crowd of men rushing on in disorder like a pack of hounds in full cry, to the harsh sound of huge trumpets, is graphic, while his account of the death and obsequies of Bhagti \* Thapa at Malaun, the solemn handing over of his son to the care of Amar Singh—his resolution to win victory and die on the field—the return of his body with honour by Ochterlony, and its burning on a funeral pyre, on which two of his wives mounted, in full view of the two armies, has something of genius in its simple telling. In the spelling of place-names the author usually arrives at a result which differs, even in phonetic value, from all other authorities and from present-day maps.

"*History of the Political and Military transactions in India during the administration of the Marquess of Hastings, 1813—1823, by Henry T. Prinsep of the Bengal Civil Service*" published 1825, and enlarged from the "narrative" by the same author published in 1820. A standard work, four chapters of which are devoted to the Nepal war, containing a useful resumé of the causes of the war, and its general conduct. The account of the operations in the Simla hills is necessarily condensed, and does not enable an uninstructed reader to follow the actual course of events throughout, the operations up to the 26th November being, for instance, disposed of in half a page. Nevertheless, it fills in a few gaps in the official correspondence and supplies some local colour, though topographical indications are vague.

"*Journal of a tour through part of the Snowy Range of the Himala Mountains,*" etc., by James Baillie Fraser, Esq., published 1820. The author accompanied his brother Mr. William Fraser, Political Agent, in a tour through the Simla Hill States and to the sources of the Jumna and Ganges in the summer of 1815, reinstating the rajas deposed by the Gurkhas, and making known the British power. The book opens with a clear, condensed account of the rise of the Gurkha power, the strength and nature of the Gurkha forces, the origin and progress of the war. As Mr. Fraser was present at the siege of Jaitak from the middle of March till the 6th May, everything that he writes regarding the operations of General Martindell's division is of great value. It is clear however that

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\* According to Prinsep, this name, which is variously spelt according to each writer's fancy, is a contraction of Bakhtyar. All accounts agree in praising the noble character and youthful vigour of this hero, whose age was seventy years.

of events in General Ochterlony's operations tended, and in this respect it is dangerous. The book is one to be read however by war.

and non-contemporaneous accounts of, or references to the campaign of 1814-15, such as I have come across, are derived from published despatches, or one or more of the sources referred to, place-names being reproduced in their original, and highly confusing spelling, as also geographical errors, and the various accounts being sometimes contradictory of movements and actions. The results of uncritical selection on these lines commonly convey an entirely erroneous idea of the actual course of events, and are sometimes frankly unintelligible. The original authors had, it must be remembered, no accurate maps, in the absence of which it was difficult for them to comprehend perhaps, certainly to convey to their readers, a true idea of events, their object, and results; and the mere unintelligent copying or condensation of such accounts makes confusion worse confounded.

I must now permit myself some remarks and criticism on my own work. In the first place, I may say that the identification of Kahanani as the point where Ochterlony crossed the Ramgarh range and formed a post on his line of communications in November 1814, is established by unmistakable evidence. The place is called in printed despatches "Kaudree," by Prinsep "Khundnee" and by the author of the "Sketches" "Candni." The first is due probably to a misprint of MS., the two latter are almost the phonetic equivalent of Kahanani. The spelling adopted has, however, led to the impression that Ochterlony crossed the range at Chandi Ghat, about nine miles S.-E. of Ramgarh. Now it is quite clear from despatches and from the "Sketches" that the left of the Gurkha position was established on the commanding height two miles only S.-E. of Ramgarh and that Kaudree, *alias* Candni, was only one-and-a-half 'kos' distant from the Gurkha left. Other corroborative evidence impels to the conclusion arrived at in my paper.

As regards the action of the 28th-29th December 1814, my paper refers to it in error as taking place on the heights east of Ramgarh. The actual locality was the vicinity of Tibbu Tem, *alias* Tibbu da Dhar (of the small and large scale survey maps respectively), commonly called "Deboo" (with several variants) in contemporary accounts, situated on a broad spur trending down S.-E. from the main range, and about three miles due north of Ramgarh. The Gurkha counter-attack, which failed, was delivered from their post at Dhar situated on the crest of the range above Tibbu. The details of this fight are somewhat too obscure for reproduction. Despatches slur over them, the author of the "Sketches" dwells as usual upon some preliminary unsteadiness on the part of the sepoys, while the topographical descriptions of all authorities hardly fit the actual ground. The action resulted, however, as desired, first in the



the sequence and course of events in General Ochterlony's operations were not fully comprehended, and in this respect it is dangerous to follow him too closely. The book is one to be read however by any historian of the war.

As for later, and non-contemporaneous accounts of, or references to, Ochterlony's campaign of 1814-15, such as I have come across, seem to be derived from published despatches, or one or more of the authorities referred to, place-names being reproduced in their original, variable, and highly confusing spelling, as also geographical and topographical errors, and the various accounts being sometimes contradictory of movements and actions. The results of uncritical compilation on these lines commonly convey an entirely erroneous idea of the actual course of events, and are sometimes frankly unintelligible. The original authors had, it must be remembered, no accurate maps, in the absence of which it was difficult for them to comprehend perhaps, certainly to convey to their readers, a true idea of events, their object, and results; and the mere unintelligent copying or condensation of such accounts makes confusion worse confounded.

I must now permit myself some remarks and criticism on my own work. In the first place, I may say that the identification of Kahanani as the point where Ochterlony crossed the Ramgarh range and formed a post on his line of communications in November 1814, is established by unmistakable evidence. The place is called in printed despatches "Kaudree," by Prinsep "Khundnee" and by the author of the "Sketches" "Candni." The first is due probably to a misprint of MS., the two latter are almost the phonetic equivalent of Kahanani. The spelling adopted has, however, led to the impression that Ochterlony crossed the range at Chandi Ghat, about nine miles S.-E. of Ramgarh. Now it is quite clear from despatches and from the "Sketches" that the left of the Gurkha position was established on the commanding height two miles only S.-E. of Ramgarh and that Kaudree, *alias* Candni, was only one-and-a-half 'kos' distant from the Gurkha left. Other corroborative evidence impels to the conclusion arrived at in my paper.

As regards the action of the 28th-29th December 1814, my paper refers to it in error as taking place on the heights east of Ramgarh. The actual locality was the vicinity of Tibbu Tem, *alias* Tibbu da Dhar (of the small and large scale survey maps respectively), commonly called "Deboo" (with several variants) in contemporary accounts, situated on a broad spur trending down S.-E. from the main range, and about three miles due north of Ramgarh. The Gurkha counter-attack, which failed, was delivered from their post at Dhar situated on the crest of the range above Tibbu. The details of this fight are somewhat too obscure for reproduction. Despatches slur over them, the author of the "Sketches" dwells as usual upon some preliminary unsteadiness on the part of the sepoys, while the topographical descriptions of all authorities hardly fit the actual ground. The action resulted, however, as desired, first in the

evacuation by the Gurkhas of their posts S.-E. of Ramgarh, later in their withdrawal to Malaun.

The route followed by Arnold down the Gamber River is not quite accurately shown in Map I of my paper. He actually moved along the hills above the *left* bank of the Gamber, crossing the river, before occupying Ratanpur, at a point a few miles below that place.

As regards the battle of Malaun, it may be mentioned that I purposely avoided making use of the place-names accorded to the various peaks and points of attack in Ochterlony's despatches and in other accounts, such as "first Deonthal" and "second Deonthal" (points at different ends of the position), "Rylah," "Synge," etc., for the reason that none of the places are actually so designated in the survey maps, or apparently in common parlance. There are, however, villages bearing names having some phonetic resemblance down the northern side of the range and approximately below the points in question. It seems evident that a nomenclature, more or less arbitrarily given by Ochterlony to certain well defined points for convenience of identification and use in operation orders, has thus accidentally achieved a permanency which tends rather to misunderstanding than otherwise. It is only owing to the fortunate fact that a large scale panorama sketch of the position and lines of advance accompanies Ochterlony's despatch that identification of localities can be made with absolute confidence. Without this all kinds of errors have been possible, and have been made, even to the supposition that Ochterlony attacked from the south-west and not from the north-east side of the Malaun range.

## PRECIS OF FOREIGN MILITARY PAPERS.

### VOYENNI SBORNIK.

#### *The Rôle of Flushing in the event of a European War.*

Under the above title the *Voyenni Sbornik* publishes an article which will be of great interest to English readers at the present time.

The Bill introduced into the Dutch Parliament in July 1910 regarding the Netherlands coast, was inspired by the idea that the sea-border might be subjected to attack after the declaration of war or perhaps even simultaneously with it; and that, in order for them to be able to maintain their neutrality, it was necessary to begin defensive works by constructing a fort at Flushing.

The scheme of the actual Bill was as follows:—

“Credit is required for works:

(1) For the improvement of coast defences and their armament for barricading channels at the island of Texel, at the port of Imniden, in the gulf of the Hook of Holland, at the island of Goeree, and at the mouths of the Scheldt.

(2) For the improvement of the fortified position of Helder.

(3) For the construction of new fortifications designed for guaranteeing the neutrality of the Western Scheldt.

(4) For the strengthening of coast defence by the building of eight deep-draught torpedo-boats, 14 armoured gun-boats, 2 submarines, and by the collection of a store of mines.”

The credit for all these fortifications and works amounted to 84 million francs, 11 millions being assigned specially for Flushing.

This scheme raised an outcry in the Press against Holland fortifying Flushing or any part of her coast. It was said that there was no necessity whatever for such fortifications, especially at Flushing, which was situated altogether outside any system of defence. International law was mentioned, and by quoting paragraphs of different treaties, the defenders and the assailants of the scheme proved, each one to his own satisfaction, the correctness of his point of view.

Some considered that Holland had no right, by blocking the mouth of the river Scheldt, to interfere with the powers who had undertaken to guarantee Belgian neutrality in coming to the assistance of Antwerp, should it be in danger; others opined that the Dutch had every right to utilise the mouth of the Scheldt, especially as Holland herself is not among the above-mentioned powers.

Notwithstanding the most furious assaults on the Government the Chamber of Deputies passed the bill for the fortification of the coasts, and only remarked that it would not have been out of



place to set aside something for increasing the armed forces of the country.

In order to explain exactly what changes in the general plan of the defence of Holland the new law for fortifying the coasts entails, the author refers to the plan of the defence of the whole kingdom, passed by the States-General so long ago as 1874 :—

“The idea of the defence of the country was inspired by the shape of Holland and its geographical qualities. The defence rested on the central reduit of the country.—Amsterdam, thoroughly protected by forts and around it the vast strategical position of the ‘Fortress of Holland,’ which contains in itself the richest provinces of the kingdom. This position, from the east and south is covered by the ‘lines of inundation’ constructed in 1894. On the north it rests on the Zuyder Zee with its forts Naarden and Minden, which connect it up with the fortifications of Amsterdam. Altogether it includes 87 works, and cost 100 million francs. The defence of the river passages is not included in this system, being founded on special defences at the mouths of the rivers, all the mouths, more or less, being actually commanded by forts, except the Western Scheldt, which is the only one navigable by big ships. But, generally speaking, the coast defences, at the mouths of the rivers, are extremely weak and the easiness of a descent at several points of the coast-line might tempt an enemy to take the ‘line of inundations’ in the rear.

“At the last reading of this Bill in the Chamber of Deputies, the Dutch Government thus characterised Flushing, which is situated right at the mouth of the Western Scheldt.

“The largest war-ships will find in Flushing a reliable harbour although it is not entirely protected from unfavourable winds. Besides this Flushing possesses an excellent port and extensive wharves. The capture of the western arm of the Scheldt would be extremely important for a hostile fleet operating against our (*i.e.*, the Dutch) coasts. For such an enemy the above-mentioned point would serve as a sea-base and a place of refuge where he could carry out the repairs of his ships. Also this point would serve as a headquarters for the blockade of our coasts and a base for the operations of a hostile fleet of torpedo-boats. It is absolutely essential for us to ensure the maintenance of our neutrality and to defend Flushing. The Dutch fleet is not in a position to effect this, as it does not possess a sufficient number of battle-ships for a struggle with a hostile fleet.\* Much less can our land forces take on themselves the task of blocking the entrance to the river and the defence of the port.

“A fortified port, capable of resisting capture by storm, would prevent an enemy from making use of Flushing as a base of operations against our coasts. In this case the occupation by an enemy of the islands along the coast and of the railway from Middelburg—Berg-op-Zoom would be deprived of considerable

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\* It consists of 9 small coast-defence vessels of from 2,000 to 6,000 tons, 7 cruisers of 4,000 tons, 4 destroyers, 26 torpedo-boats and one submarine. Two more submarines are in course of construction.

importance. Finally, the construction of such a fort cannot create any new situation in our international obligations."

The author reminds us that even in the time of Napoleon I., Flushing had this same importance, as it served as the first objective of the ill-fated expedition undertaken by the British in July 1809 for the purpose of destroying the French fleet and of capturing Antwerp. Again on the 17th October 1810, Napoleon wrote:—"I intend to expend at least 4 million francs in the coming year on the fortification of the Scheldt."

The author continues:—"Students of international law say that Holland can in no way interfere with the passage along the Scheldt of war-ships proceeding to the defence of Belgium and the integrity of her neutrality. Therefore Holland has no right to construct a fort at Flushing to block the Scheldt and 'bottle up' Antwerp. But under cover of this judicial argument lies the essence of the whole question, *viz.*, that the fortification of Flushing may prevent the British from landing in Belgium for the defence of her neutrality, and for the purpose of striking a blow at the flank of a German army invading Belgium. In this is contained all the interest of the present discussion about Flushing.

"That the Germans intend to march through Belgium, is incontestable. Their military writers no longer conceal this plan, and their Great General Staff has already accomplished something in connection with it by the construction, at a point in the neighbourhood of Eifel, of a system of roads and platforms for the detraining of troops. Now that the French frontier has been turned into a continuous fortified barrier, which presents to the Germans, if not an insurmountable obstacle, at all events a very serious one, the Germans have to try and pass round the ends of this barrier, and all indications point to such a passage being the most advantageously carried out from the north. The valley of the Oise is a classical route of invasion into the very heart of France by the shortest possible line. All wars between France and Germany up to 1870 were settled in Belgian territory. In his remarkable article in the *Deutsche Revue* (January 1909), which gained the high approval of the Kaiser, General von Shliffen distinctly says that if it is difficult to advance by a direct route or, if such a route is blocked, then it will be necessary to go round these unpleasant obstacles through Switzerland or Belgium.

"But leaving aside all other considerations, the above-mentioned plan of action of the Germans on their western frontier arises out of the tremendous growth of their armed strength, which has resulted as a consequence of their surprising national vitality. In the years immediately following the war of 1870-71, the strategical deployment of their army was being got ready between the southern end of Luxemburg and the north of Alsace: this explains the care that they have taken to direct the network of their railways on to the front Metz-Mulhausen, and to construct platforms for detraining troops in Alsace-Lorraine.

"But, as their strength grew, the district of concentration, whose resources, etc., had been most excellently worked out in the technical sense, became overcrowded : gradually a tremendous accumulation of troops in depth was bound to take place in this district, which would have been incompatible with a decisive advance into French territory, and would have been observed immediately after the commencement of hostile operations. The best means of making full use of their numerical superiority with any hope of success lies in the simultaneous advance of all their troops on a broad front.\* This idea led to the development of the railway system between the Rhine and the Belgian and Luxemburg frontiers, and it has been carried to such an extent that there is no room for any doubt regarding the true intentions of the Germans.

"The district of Eifel is covered with excellent roads, but there was only one line of railway, *i.e.*, from Cologne—Treves, and several branch lines. This railway system was entirely sufficient for the needs of this thinly-populated district ; but in the last few years the Germans have constructed a thick network of railways on the front Clervault (?)—Luxemburg and Trèves—Saint With. The work has been carried on with extraordinary celerity, and thousands of workmen are employed on the construction of roads in the valley of the Aar.

"After some resistance the Belgian Government at last consented to the joining up of the lines from Malmedy—Stavelot, which brings Cologne and Remagen into direct communication with Liège. On the main lines Dusseldorf—Roermond—Antwerp, and Coblenz—Trèves there are now five lines which can convey troops on to the Belgian and Luxemburg frontiers. On the one hand, these lines on the Rhine join up with the railways from Northern Germany : at their other end they rest on three parallel lines along the frontier, with a whole series of detraining platforms. Judging from the map of the railways and the distribution of platforms, the greatest pressure of detraining may be expected on the front Aix-la-Chapelle—Saint With, and perhaps Clervault—Luxemburg. Here from four to seven army corps will detrain ; these corps are destined for the invasion of Belgium, and in German military circles they take special pleasure in flattering themselves with the prospect of a pleasant military promenade through that country."

The author then explains Belgium's system of defence which is organised on similar lines to that of the Netherlands, and he remarks that for field operations she would not have more than 100,000 men, the remaining 80,000 being required for the defence of Antwerp and other fortresses on the Maas.

The article continues :—"But what part would Belgium take in the event of a European war ? The right flank of the German army, after entering Belgium, will not move north of the river Meuse, so as not to find itself between Antwerp and the fortresses of Liège and

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\* According to Falkenhauseu, in 1870, 450,000 men were concentrated on a front of 150 kilometres : in the coming war it will be necessary to deploy 1,250,000 men on a front of 400 kilometres.

Namur, and so as not to be separated from its main force by a serious obstacle. This right flank of the army will remain wholly on the right bank of the river, being screened by a flank guard from the Belgian fortresses. But the Belgian army will be condemned to an entirely passive rôle: at the best, after making a few demonstrations against the Germans, it will retire behind the forts of Antwerp.

“The advent into the theatre of war of the British expeditionary force (6 divisions of infantry and one of cavalry) and its operations in conjunction with the Belgian troops, altogether 160,000 British and 80,000 Belgians—would give a force outnumbering the right wing of the Germans. With this force the German army would have to reckon most seriously. But the peculiarities of the present British military organization do not permit of the full possible strength of the expeditionary force being sent all at once on this expedition. Even if we allow that they mobilize in ten days, and that there will be no complications in India or in Egypt, the general opinion of the country would protest in the most decided manner against the sending away, out of the confines of Great Britain, the whole of their land forces. The Territorial army, which would remain behind, has, on account of its want of training, no military value whatever. Its strength does not reach 260,000 men, and in the near future its condition will not improve, as in 1912, 35 per cent of its personnel finish the term of their service.”

It is pointed out that to us it would be a serious matter if Flushing were fortified, and that since we could not oppose the simultaneous occupation of Antwerp and Flushing, it is our policy to arrange that at the end of a war there should not be new masters of these two places. The author thinks we care very little about helping the Belgians to oppose the invasion by the Germans of their country, but that it is extremely necessary for us to lend support for the defence of Antwerp, and that our means would allow of us disembarking a corps of 50,000 men for this purpose, ‘which the German army would not be right to despise.’ It is pointed out that the Germans in their turn have a great interest in gaining possession of the big port of the Scheldt. Napoleon attached an exceptionally great importance to this point and had intended to use Antwerp as a starting point for a decisive attack on England. “It is possible that in the coming European war Antwerp will become the objective of the operations of both sides, or at least one of the chief stakes for the securing of victory. For a long time now German wishes regarding the Netherlands have shown themselves openly. So long ago as the signing of the peace of Frankfort, Amdt formulated the German desire to be master in the future of the big rivers and western ports. The annexation of Holland and Belgium to the German Empire is the unalterable aim of German policy, and ‘the realisation of this is inevitable’ say German writers: ‘The most valuable result of future German victories will be the acquisition of the sea coast between Calais and Antwerp. Only the annexation

of this territory can ensure to the German monarchy safety in the future from the side of England and France'."

The Germans are teaching the rising generation to look on the realisation of this wish as a concrete fact. In the text-book of geography by Professor Daniel, of which 400,000 copies have been issued, Luxemburg, Belgium, and Holland are shown as German States. Langhan's German Atlas counts Brussels, Ghent, and Antwerp among German towns.

"In the strategical sense Antwerp and Flushing have a tremendous importance in German eyes as a naval base for operations against England, being much closer to the coast of England than Wilhelmshaven, and facilitating not only their struggle with the British fleet, but also a descent on the British coasts. At present the British Navy is stronger than the German, but Germany is striving to increase the size of her fleet. In 1913 there will be 25 British Dreadnoughts against 17 German, and in 1914, 30 against 21. So the British are a long way away from the principle that for each hostile iron-clad two British ships of equal strength must be maintained."

The making use of Flushing as a naval base would give the German fleet a very strong point from which to carry out naval operations, and also operations for the invasion of England, whereas if the British gained possession of it, it would furnish very advantageous conditions for blockading the German squadrons and for the neutralisation of Wilhelmshaven.

"The British must not base any hopes on Dutch friendship, and over this question of Flushing they ought to be convinced of this more than by anything else. They must rely only on their own strength, and of course it would be far more advantageous for them to use it without hesitation, as soon as Germany gives them a pretext to do so.

"In one of his articles in the *Times* Colonel Repington points out, as an unfriendly hint to England, that point in the Bill which was discussed in the Dutch Chamber of Deputies, where reference is made to 'a hostile fleet' and warns Holland of the dangers which are awaiting her in the future. The Dutch know this well. They are right in saying that the fortification of Flushing is necessary to them to secure their neutrality. The policy of the Netherlands lies and always will lie, in the observation of a strict and impartial neutrality towards belligerents, whoever they may be. 'We will remain the friends of those who respect it: but the moment one of the belligerent parties violates it, we will take our place in the ranks of her enemies and will defend ourselves.' However, notwithstanding these diplomatic assurances, there is reason to think that in the question of Flushing, Holland is merely a tool in the hands of Germany. All the sympathies of her Government and population are on the side of the latter. The excitement aroused in the Press in 1904, by the announcement of Baron von Heeken, Ambassador to the Netherlands in Denmark, regarding a letter of the

Emperor William II. to Queen Wilhelmina about the coast defence of the kingdom, has not yet been forgotten. This letter was officially denied more than once, but nevertheless it is to this very incident that 'those extremely serious events in 1904' to quote the words of debates in the States-General, refer.

"Holland is feeling the influence which great commercial syndicates have on her. The firm of Krupp is the supplier of her army, and is of great importance in Holland. We must not forget also that in Holland, even up to the present time, the memory of the struggle with the British for supremacy at sea, has not yet died out. And besides, not so very long ago, the war in the Transvaal again aroused hostile feeling against the British. The Germans know how to remind their neighbours and relations, and can do so without missing a suitable opportunity, that if they themselves are not able to protect their colonies, then they may rely on German help. The Dutch are between the devil and the deep sea, and, like all weak nationalities, are condemned to bow to the demands of their strong neighbours. And it is lucky for them, too, if these demands appear in a friendly form.

"The position of Belgium is the same, although in this case it is complicated by racial strife, which weakens the strength of the country. The Walloons trace their descent from the Germans, the Flemish from the French. The closer union of both small kingdoms would be their best chance of improving their international position, and of guaranteeing their independence. The Germans fear such an agreement more than anything, as the result of this would be a very serious difficulty for the realisation of German ambitions."

The author concludes his article with the following words:—

"To sum up, the question of Flushing is one of the episodes of ever-growing Anglo-German rivalry, which is getting tied up tighter and tighter in the knot of modern international politics, until at last it will be rent asunder by the titanic struggle of these two European nations."



## REVIEWS.

**"Protection in War."** By Major-General F. J. Aylmer, V.C., C.B. London: Hugh Rees, 1912.

The number of military books recommended for study is causing serious anxiety to those soldiers who put soldiering first and all else in a lower place in the category of their occupations; and nowadays we have no use for those who do not do so. A selection of the books that are to be studied depends, however, both on the book and on the reader. Military books include in their classification two distinct types. The one aims at supplying information in the most convenient and condensed form; information not only as regards facts and experiences, but also about the opinions based on them by the best and deepest thinkers of modern times. This type commends itself to the mentally indolent men who are satisfied by knowing the regulations—a most commendable ambition in itself—but who trust to their memory supplying them with a solution when they find themselves unaided in a tight corner. The other type, to which the book under review belongs, is instrumental, and probably by design, in assisting officers in their difficult task of self education in the full sense of the term. To those who recognise that education means the formation of character, that character can only be built up by constant practice in accepting responsibility, that eager readiness to take responsibility is due to confidence in one's own judgment, itself entirely a matter of practice; and to those who can be trusted with other people's opinions without fear of their being appropriated solely on account of the reputation of the authors this book is strongly recommended. The first two chapters give the clue to the whole book, and the student is advised to study them most carefully if he would reap the full value from the remainder. The application, for example, of the half dozen causes of "unreadiness" to his own experiences, whether on service or at manoeuvres, will bring home to the reader, in a way which no ordinary text book or set of examination questions can do—the underlying philosophy, if the word may be used, of the whole system of protection. With this as a foundation of thought, the remainder of the book can be read in a light which shows up the author's deeply studied analysis of his subject. Chapter IX (the second on advanced guards) is one of the best, or at any rate it brings out most clearly the importance of habituating the mind, by study and by constant practice, to take a comprehensive survey of the conditions affecting a problem, to arrive rapidly at a reasoned conclusion, and to take the responsibility of prompt action. It is not always clear whether the author is giving his own opinion or that of others. There is no doubt what his views are as regards the employment of the general advanced guard and the independent cavalry, the chapters on which (X, XI and XVIII) are all excellent, but in one or two less important matters





in peace will always be towards a science of war (*peace* derson, who would probably have strongly objected to the work published after his death) based on numbers, and properties of rifles and guns. The "doctrine" to which us, and, as General Langlois says, "without a books are of little avail," is founded first and foremost of *moral*. Throughout the chapters on Training, the of the methods advocated is the production of a high state *moral* in the ranks of our cavalry.

Now, *moral* is based on confidence, and without confidence is nothing worth. Confidence in the cavalryman means confidence in his leader, confidence in his weapon, be it rifle, sword or lance, and in his horse, and confidence in his own ability to take care of himself and his horse both against the wiles of the enemy and that more insidious foe the wastage of war.

To beget confidence in others the leader must have confidence in himself. It is lack of confidence that prevents the cavalry leader from seizing the golden opportunity of shock action, obsessed as he is with "its gambling uncertainty, its losses in men and horses, its need of intense resolution." It is in reality lack of confidence which drives a leader into "galloping at everything," without a thought of manœuvre to gain an enemy's flank, or to provide a target for his guns whilst forcing the enemy to mask his own. A well-reasoned audacity, as the author points out, does not spring into growth on the field of battle: it has its roots deep in the studious hours of peace. The standard for leaders held before us is a high one, but few earnest soldiers will disagree with the author in his condemnation of "the purely amateur" officer, and we may even class with the "purely amateur officer" the officer who, though nominally a professional soldier, has reduced himself by physical or mental inertia to the status of an amateur. The author says, "Purely amateur officers are poison, (the virus being in direct proportion to their rank) and entirely out of place in war. To imagine that it is patriotism to wait till war begins, and then aspire to lead others, is an idea which should be crushed once for all. It is not patriotism, it is murder."

The strongest sense of the British cavalryman is perhaps that of honesty, and in pointing out the dishonesty of the scout, who turns his back when "duty tells him that he should try and see or find out more" General Rimington strikes a note which will really appeal to our cavalry.

In a chapter devoted to the controversial question of armament, the author, whilst himself favouring a pointing sword made of the best steel, admits also the excellence of the "queen of weapons" the lance, the essential point being that the cavalryman must have "implicit confidence in his weapon." For officers armed with the revolver, the instances quoted in Captain Alonzo Gray's "Cavalry Tactics as illustrated by the War of the Rebellion" may be interesting reading.

other writers are sometimes quoted, and there is nothing to show when the quotation ends and the author resumes his own train of thought. We are inclined to think that the theory of the Preconceived Idea has not received the treatment which its advocates might expect and that they will complain that justice has not been done to it. There is also a sense of disappointment that the author has not said more in Chapter VIII on the 4th duty of the advanced guard, *i.e.*, clearing the way. It is true he reverts to it in the next chapter, but it seems to be dismissed rather too briefly. Among other minor criticisms, we think it would have been an advantage to introduce marginal or cross headings as an assistance in following the sequence and termination of the various arguments contained in some rather lengthy chapters. This is notably the case in Chapter VIII which in consequence gives the impression of being rather discursive and laboured. An unfortunate misprint in the text occurs in Chapter X with reference to Plan 6. The same letters (C. D.) are used by mistake in place of alternative lettering on the plan. This is a little perplexing until the existence of a mistake is discovered, but the subsequent labour of ascertaining the correct lettering is not without value.

The whole book gives evidence of long and arduous study of modern military literature, combined with earnest, constructive thought, with the object of deriving the maximum of benefit from the process. To say the least of it, it sets an excellent example to others of the best method of stimulating the thought initiative without which all mental labour is valueless.

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**"Our Cavalry."** By Major-General M. F. Rimington, C.V.O., C.B., Inspector of Cavalry in India. London: Macmillan & Co., 1912. Price 5s.

Although the author of this book disclaims any intention to produce an exhaustive treatise on cavalry, and states that it has been written principally for junior officers of all arms, there can be no doubt that cavalry officers of all ranks will find food for thought in every page, and that officers of other arms will obtain a clear insight into the fighting methods of cavalry from its perusal.

To evolve a method from an ascertained basis of results is not a matter of great difficulty, but the modern writer on the strategical use and fighting tactics of cavalry has no such certain basis. He must be content to evolve theories founded mainly on the mistakes made in recent wars, and general principles deduced from campaigns fought under widely different conditions of armament. In his introductory chapter the author states the general principles which have guided the great cavalry leaders of the past in their movements and dispositions for applying the shock of cavalry.

In the whole art of war the factor which is hardest to realize for the student of books is that of *imagination*. The tendency of theories

formulated in peace will always be towards a science of war (*pace* Colonel Henderson, who would probably have strongly objected to the title of the work published after his death) based on numbers, and the ballistic properties of rifles and guns. The "doctrine" to which the author leads us, and, as General Langlois says, "without a doctrine, text-books are of little avail," is founded first and foremost on a study of *moral*. Throughout the chapters on Training, the keynote of the methods advocated is the production of a high state of *moral* in the ranks of our cavalry.

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The fighting methods of cavalry from the squadron up to the brigade in conjunction with horse artillery both against cavalry and in the general engagement are fully discussed in clear language illustrated by diagrams. For the benefit of infantry officers unacquainted with cavalry formations, who wish to follow these chapters, it may be as well to explain that a squadron column is the exact counterpart of a company column, substituting troops for sections, and that the regimental mass of cavalry is equivalent to a line of company columns at 5 yards interval. In any subsequent edition a useful addition might be made to the chapters on cavalry in the general engagement in the form of suggestions as to the nature of orders to be issued to the cavalry.

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"But, as their strength grew, the district of concentration, whose resources, etc., had been most excellently worked out in the technical sense, became overcrowded: gradually a tremendous accumulation of troops in depth was bound to take place in this district, which would have been incompatible with a decisive advance into French territory, and would have been observed immediately after the commencement of hostile operations. The best means of making full use of their numerical superiority with any hope of success lies in the simultaneous advance of all their troops on a broad front.\* This idea led to the development of the railway system between the Rhine and the Belgian and Luxemburg frontiers, and it has been carried to such an extent that there is no room for any doubt regarding the true intentions of the Germans.

"The district of Eifel is covered with excellent roads, but there was only one line of railway, *i.e.*, from Cologne - Treves and several branch lines. This railway system was entirely sufficient for the needs of this thinly-populated district, but in the last few years the Germans have constructed a thick network of railways on the front Clervault - Luxemburg and Treves - Saint With. The work has been carried on with extraordinary celerity, and thousands of workmen are employed on the construction of roads in the valley of the Aar.

"After some resistance the Belgian Government at last consented to the joining up of the lines from Malmédy - Stevelot, which brings Cologne and Remagen into direct communication with Liège. On the main lines Düsseldorf - Roermond - Antwerp, and Cologne - Treves there are now five lines which can convey troops on to the Belgian and Luxemburg frontiers. On the one hand these lines on the Rhine join up with the railways from Northern Germany: at their other end they rest on three parallel lines along the frontier, with a whole series of detraining platforms. Judging from the map of the railways and the distribution of platforms, the greatest pressure of detraining may be expected on the front Aix-la-Chapelle - Saint With, and perhaps Clervault - Luxemburg. Here from four to seven army corps will detrain; these corps are destined for the invasion of Belgium, and in German military circles they take special pleasure in flattering themselves with the prospect of a pleasant military promenade through that country."

The author then explains Belgium's system of defence which is organised on similar lines to that of the Netherlands, and he remarks that for field operations she would not have more than 100,000 men, the remaining 80,000 being required for the defence of Antwerp and other fortresses on the Maas.

The article continues:—"But what part would Belgium take in the event of a European war? The right flank of the German army, after entering Belgium, will not move north of the river Meuse, so as not to find itself between Antwerp and the fortresses of Liège and

\* According to Fabian's plan in 1870 400,000 men were concentrated in a front of 100 km. metres. In the coming war it will be necessary to deploy 1,200,000 men in a front of 400 km. metres.

Namur, and so as not to be separated from its main force by a serious obstacle. This right flank of the army will remain wholly on the right bank of the river, being screened by a flank guard from the Belgian fortresses. But the Belgian army will be condemned to an entirely passive rôle: at the best, after making a few demonstrations against the Germans, it will retire behind the forts of Antwerp.

"The advent into the theatre of war of the British expeditionary force (6 divisions of infantry and one of cavalry) and its operations in conjunction with the Belgian troops, altogether 160,000 British and 80,000 Belgians—would give a force outnumbering the right wing of the Germans. With this force the German army would have to reckon most seriously. But the peculiarities of the present British military organization do not permit of the full possible strength of the expeditionary force being sent all at once on this expedition. Even if we allow that they mobilize in ten days, and that there will be no complications in India or in Egypt, the general opinion of the country would protest in the most decided manner against the sending away, out of the confines of Great Britain, the whole of their land forces. The Territorial army, which would remain behind, has, on account of its want of training, no military value whatever. Its strength does not reach 260,000 men, and in the near future its condition will not improve, as in 1912, 35 per cent of its personnel finish the term of their service."

It is pointed out that to us it would be a serious matter if Flushing were fortified, and that since we could not oppose the simultaneous occupation of Antwerp and Flushing, it is our policy to arrange that at the end of a war there should not be new masters of these two places. The author thinks we care very little about helping the Belgians to oppose the invasion by the Germans of their country, but that it is extremely necessary for us to lend support for the defence of Antwerp, and that our means would allow of us disembarking a corps of 50,000 men for this purpose, 'which the German army would not be right to despise.' It is pointed out that the Germans in their turn have a great interest in gaining possession of the big port of the Scheldt. Napoleon attached an exceptionally great importance to this point and had intended to use Antwerp as a starting point for a decisive attack on England. "It is possible that in the coming European war Antwerp will become the objective of the operations of both sides, or at least one of the chief stakes for the securing of victory. For a long time now German wishes regarding the Netherlands have shown themselves openly. So long ago as the signing of the peace of Frankfort, Amdt formulated the German desire to be master in the future of the big rivers and western ports. The annexation of Holland and Belgium to the German Empire is the unalterable aim of German policy, and 'the realisation of this is inevitable' say German writers: 'The most valuable result of future German victories will be the acquisition of the sea coast between Calais and Antwerp. Only the annexation



of this territory can ensure to the German monarchy safety in the future from the side of England and France."

The Germans are teaching the rising generation to look on the realisation of this wish as a concrete fact. In the text-book of geography by Professor Daniel, of which 400,000 copies have been issued, Luxemburg, Belgium, and Holland are shown as German States. Langhan's German Atlas counts Brussels, Ghent, and Antwerp among German towns.

"In the strategical sense Antwerp and Flushing have a tremendous importance in German eyes as a naval base for operations against England, being much closer to the coast of England than Wilhelmshaven, and facilitating not only their struggle with the British fleet, but also a descent on the British coasts. At present the British Navy is stronger than the German, but Germany is striving to increase the size of her fleet. In 1913 there will be 25 British Dreadnoughts against 17 German, and in 1914, 30 against 21. So the British are a long way away from the principle that for each hostile iron-clad two British ships of equal strength must be maintained."

The making use of Flushing as a naval base would give the German fleet a very strong point from which to carry out naval operations, and also operations for the invasion of England, whereas if the British gained possession of it, it would furnish very advantageous conditions for blockading the German squadrons and for the neutralisation of Wilhelmshaven.

"The British must not base any hopes on Dutch friendship, and over this question of Flushing they ought to be convinced of this more than by anything else. They must rely only on their own strength, and of course it would be far more advantageous for them to use it without hesitation, as soon as Germany gives them a pretext to do so.

"In one of his articles in the *Times* Colonel Repington points out, as an unfriendly hint to England, that point in the Bld which was discussed in the Dutch Chamber of Deputies, where reference is made to 'a hostile fleet' and warns Holland of the dangers which are awaiting her in the future. The Dutch know this well. They are right in saying that the fortification of Flushing is necessary to them to secure their neutrality. The policy of the Netherlands lies and always will lie, in the observation of a strict and impartial neutrality towards belligerents, whoever they may be. 'We will remain the friends of those who respect it: but the moment one of the belligerent parties violates it, we will take our place in the ranks of her enemies and will defend ourselves.' However notwithstanding these diplomatic assurances, there is reason to think that in the question of Flushing, Holland is merely a tool in the hands of Germany. All the sympathies of her Government and population are on the side of the latter. The excitement aroused in the Press in 1904, by the announcement of Baron von Hecken, Ambassador to the Netherlands in Denmark, regarding a letter of the

Emperor William II. to Queen Wilhelmina about the coast defence of the kingdom, has not yet been forgotten. This letter was officially denied more than once, but nevertheless it is to this very incident that 'those extremely serious events in 1904' (to quote the words of debates in the States-General), refer.

"Holland is feeling the influence which great commercial syndicates have on her. The firm of Krupp is the supplier of her army, and is of great importance in Holland. We must not forget also that in Holland, even up to the present time, the memory of the struggle with the British for supremacy at sea, has not yet died out. And besides, not so very long ago, the war in the Transvaal again aroused hostile feeling against the British. The Germans know how to remind their neighbours and relations, and can do so without missing a suitable opportunity, that if they themselves are not able to protect their colonies, then they may rely on German help. The Dutch are between the devil and the deep sea, and, like all weak nationalities, are condemned to bow to the demands of their strong neighbours. And it is lucky for them, too, if these demands appear in a friendly form.

"The position of Belgium is the same, although in this case it is complicated by racial strife, which weakens the strength of the country. The Walloons trace their descent from the Germans, the Flemish from the French. The closer union of both small kingdoms would be their best chance of improving their international position, and of guaranteeing their independence. The Germans fear such an agreement more than anything, as the result of this would be a very serious difficulty for the realisation of German ambitions."

The author concludes his article with the following words:—

"To sum up, the question of Flushing is one of the episodes of ever-growing Anglo-German rivalry, which is getting tied up tighter and tighter in the knot of modern international politics, until at last it will be rent asunder by the titanic struggle of these two European nations."



## REVIEWS.

**"Protection in War."** By Major-General F. J. Aylmer, V.C., C.B. London: Hugh Rees, 1912.

The number of military books recommended for study is causing serious anxiety to those soldiers who put soldiering first and all else in a lower place in the category of their occupations; and nowadays we have no use for those who do not do so. A selection of the books that are to be studied depends, however, both on the book and on the reader. Military books include in their classification two distinct types. The one aims at supplying information in the most convenient and condensed form; information not only as regards facts and experiences, but also about the opinions based on them by the best and deepest thinkers of modern times. This type commends itself to the mentally indolent men who are satisfied by knowing the regulations—a most commendable ambition in itself—but who trust to their memory supplying them with a solution when they find themselves unaided in a tight corner. The other type, to which the book under review belongs, is instrumental, and probably by design, in assisting officers in their difficult task of self education in the full sense of the term. To those who recognise that education means the formation of character, that character can only be built up by constant practice in accepting responsibility, that eager readiness to take responsibility is due to confidence in one's own judgment, itself entirely a matter of practice; and to those who can be trusted with other people's opinions without fear of their being appropriated solely on account of the reputation of the authors this book is strongly recommended. The first two chapters give the clue to the whole book, and the student is advised to study them most carefully if he would reap the full value from the remainder. The application, for example, of the half dozen causes of "unreadiness" to his own experiences, whether on service or at manoeuvres, will bring home to the reader, in a way which no ordinary text book or set of examination questions can do—the underlying philosophy, if the word may be used, of the whole system of protection. With this as a foundation of thought, the remainder of the book can be read in a light which shows up the author's deeply studied analysis of his subject. Chapter IX (the second on advanced guards) is one of the best, or at any rate it brings out most clearly the importance of habituating the mind, by study and by constant practice, to take a comprehensive survey of the conditions affecting a problem, to arrive rapidly at a reasoned conclusion, and to take the responsibility of prompt action. It is not always clear whether the author is giving his own opinion or that of others. There is no doubt what his views are as regards the employment of the general advanced guard and the independent cavalry, the chapters on which (X, XI and XVIII) are all excellent, but in one or two less important matters

other writers are sometimes quoted, and there is nothing to show when the quotation ends and the author resumes his own train of thought. We are inclined to think that the theory of the Preconceived Idea has not received the treatment which its advocates might expect and that they will complain that justice has not been done to it. There is also a sense of disappointment that the author has not said more (in Chapter VIII) on the 4th duty of the advanced guard, *i.e.*, clearing the way. It is true he reverts to it in the next chapter, but it seems to be dismissed rather too briefly. Among other minor criticisms, we think it would have been an advantage to introduce marginal or cross headings as an assistance in following the sequence and termination of the various arguments contained in some rather lengthy chapters. This is notably the case in Chapter VIII which in consequence gives the impression of being rather discursive and laboured. An unfortunate misprint in the text occurs in Chapter X with reference to Plan 6. The same letters (C. D.) are used by mistake in place of alternative lettering on the plan. This is a little perplexing until the existence of a mistake is discovered, but the subsequent labour of ascertaining the correct lettering is not without value.

The whole book gives evidence of long and arduous study of modern military literature, combined with earnest, constructive thought, with the object of deriving the maximum of benefit from the process. To say the least of it, it sets an excellent example to others of the best method of stimulating the thought initiative without which all mental labour is valueless.

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**"Our Cavalry."** By Major-General M. F. Rimington, C.V.O., C.B., Inspector of Cavalry in India. London: Macmillan & Co., 1912. Price 5s.

Although the author of this book disclaims any intention to produce an exhaustive treatise on cavalry, and states that it has been written principally for junior officers of all arms, there can be no doubt that cavalry officers of all ranks will find food for thought in every page, and that officers of other arms will obtain a clear insight into the fighting methods of cavalry from its perusal.

To evolve a method from an ascertained basis of results is not a matter of great difficulty, but the modern writer on the strategical use and fighting tactics of cavalry has no such certain basis. He must be content to evolve theories founded mainly on the mistakes made in recent wars, and general principles deduced from campaigns fought under widely different conditions of armament. In his introductory chapter the author states the general principles which have guided the great cavalry leaders of the past in their moments and dispositions for applying the shock of cavalry.

In the whole art of war the factor which is hardest to realise for the student of books is that of *moral*. The tendency of theories

formulated in peace will always be towards a science of war (*pace* Colonel Henderson, who would probably have strongly objected to the title of the work published after his death) based on numbers, and the ballistic properties of rifles and guns. The "doctrine" to which the author leads us, and, as General Langlois says, "without a doctrine, text-books are of little avail," is founded first and foremost on a study of *moral*. Throughout the chapters on Training, the keynote of the methods advocated is the production of a high state of *moral* in the ranks of our cavalry.

Now, *moral* is based on confidence, and without confidence is nothing worth. Confidence in the cavalryman means confidence in his leader, confidence in his weapon, be it rifle, sword or lance, and in his horse, and confidence in his own ability to take care of himself and his horse both against the wiles of the enemy and that more insidious foe the wastage of war.

To beget confidence in others the leader must have confidence in himself. It is lack of confidence that prevents the cavalry leader from seizing the golden opportunity of shock action, obsessed as he is with "its gambling uncertainty, its losses in men and horses, its need of intense resolution." It is in reality lack of confidence which drives a leader into "galloping at everything," without a thought of manœuvre to gain an enemy's flank, or to provide a target for his guns whilst forcing the enemy to mask his own. A well-reasoned audacity, as the author points out, does not spring into growth on the field of battle: it has its roots deep in the studious hours of peace. The standard for leaders held before us is a high one, but few earnest soldiers will disagree with the author in his condemnation of "the purely amateur" officer, and we may even class with the "purely amateur officer" the officer who, though nominally a professional soldier, has reduced himself by physical or mental inertia to the status of an amateur. The author says, "Purely amateur officers are poison, (the virus being in direct proportion to their rank) and entirely out of place in war. To imagine that it is patriotism to wait till war begins, and then aspire to lead others, is an idea which should be crushed once for all. It is not patriotism, it is murder."

The strongest sense of the British cavalryman is perhaps that of honesty, and in pointing out the dishonesty of the scout, who turns his back when "duty tells him that he should try and see or find out more" General Rimington strikes a note which will really appeal to our cavalry.

In a chapter devoted to the controversial question of armament, the author, whilst himself favouring a pointing sword made of the best steel, admits also the excellence of the "queen of weapons" the lance, the essential point being that the cavalryman must have "implicit confidence in his weapon." For officers armed with the revolver, the instances quoted in Captain Alonzo Gray's "Cavalry Tactics as illustrated by the War of the Rebellion" may be interesting reading.

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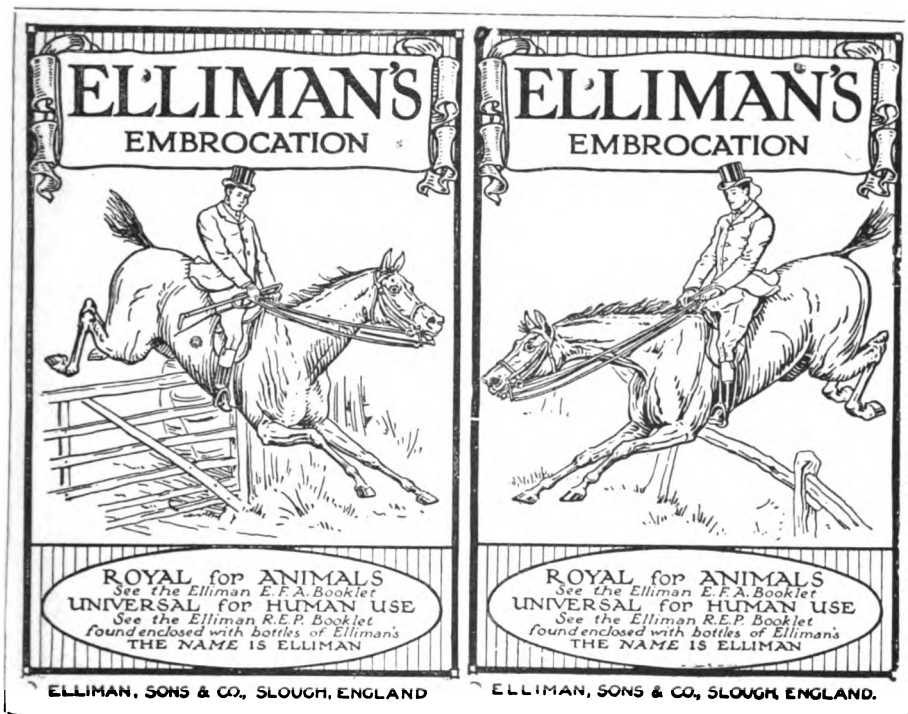
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formulated in peace will always be towards a science of war (*pace* Colonel Henderson, who would probably have strongly objected to the title of the work published after his death) based on numbers, and the ballistic properties of rifles and guns. The "doctrine" to which the author leads us, and, as General Langlois says, "without a doctrine, text-books are of little avail," is founded first and foremost on a study of *moral*. Throughout the chapters on Training, the keynote of the methods advocated is the production of a high state of *moral* in the ranks of our cavalry.

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To beget confidence in others the leader must have confidence in himself. It is lack of confidence that prevents the cavalry leader from seizing the golden opportunity of shock action, obsessed as he is with "its gambling uncertainty, its losses in men and horses, its need of intense resolution." It is in reality lack of confidence which drives a leader into "galloping at everything," without a thought of manœuvre to gain an enemy's flank, or to provide a target for his guns whilst forcing the enemy to mask his own. A well-reasoned audacity, as the author points out, does not spring into growth on the field of battle: it has its roots deep in the studious hours of peace. The standard for leaders held before us is a high one, but few earnest soldiers will disagree with the author in his condemnation of "the purely amateur" officer, and we may even class with the "purely amateur officer" the officer who, though nominally a professional soldier, has reduced himself by physical or mental inertia to the status of an amateur. The author says, "Purely amateur officers are poison, (the virus being in direct proportion to their rank) and entirely out of place in war. To imagine that it is patriotism to wait till war begins, and then aspire to lead others, is an idea which should be crushed once for all. It is not patriotism, it is murder."

The strongest sense of the British cavalryman is perhaps that of honesty, and in pointing out the dishonesty of the scout, who turns his back when "duty tells him that he should try and see or find out more" General Rimington strikes a note which will really appeal to our cavalry.

In a chapter devoted to the controversial question of armament, the author, whilst himself favouring a pointing sword made of the best steel, admits also the excellence of the "queen of weapons" the lance, the essential point being that the cavalryman must have "implicit confidence in his weapon." For officers armed with the revolver, the instances quoted in Captain Alonzo Gray's "Cavalry Tactics as illustrated by the War of the Rebellion" may be interesting reading.



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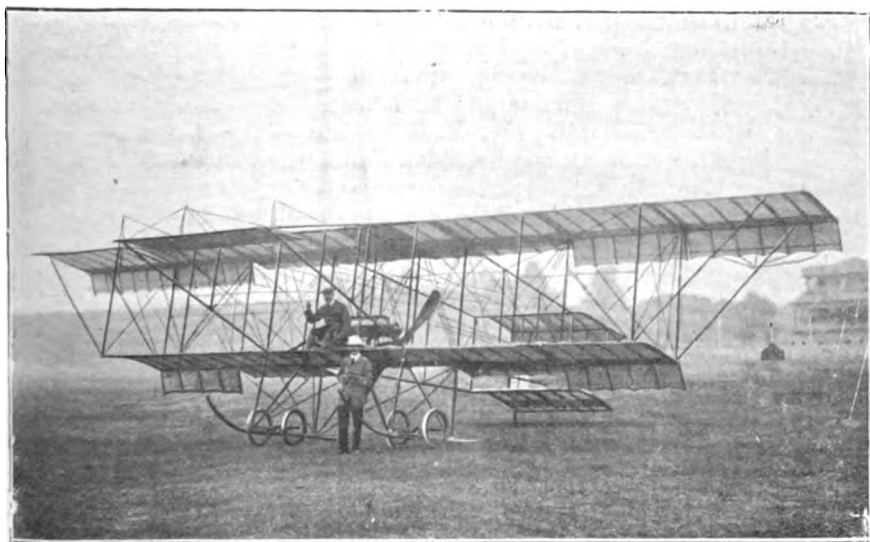
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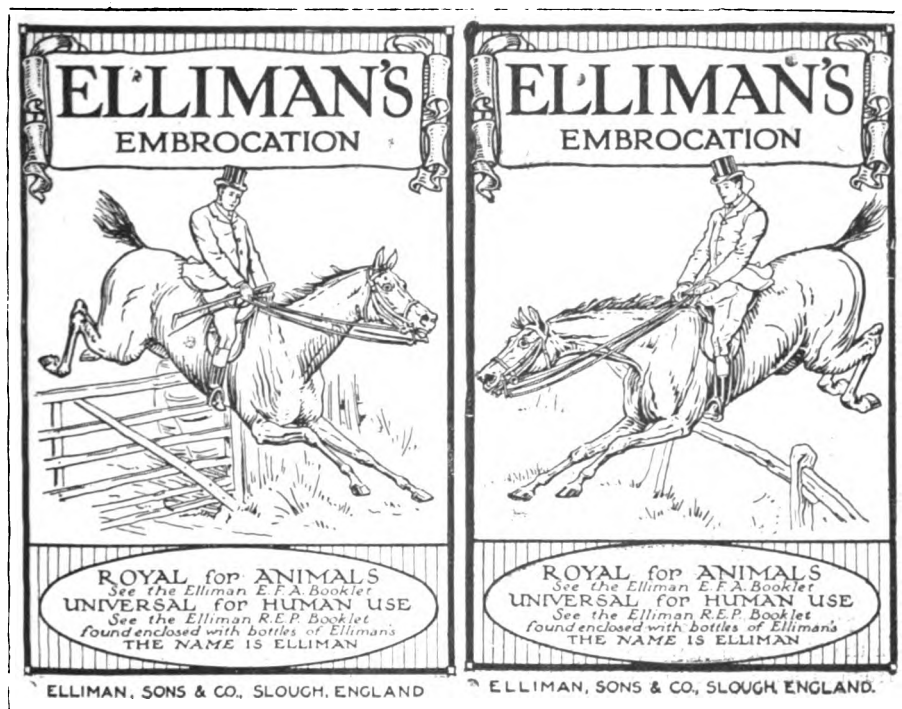
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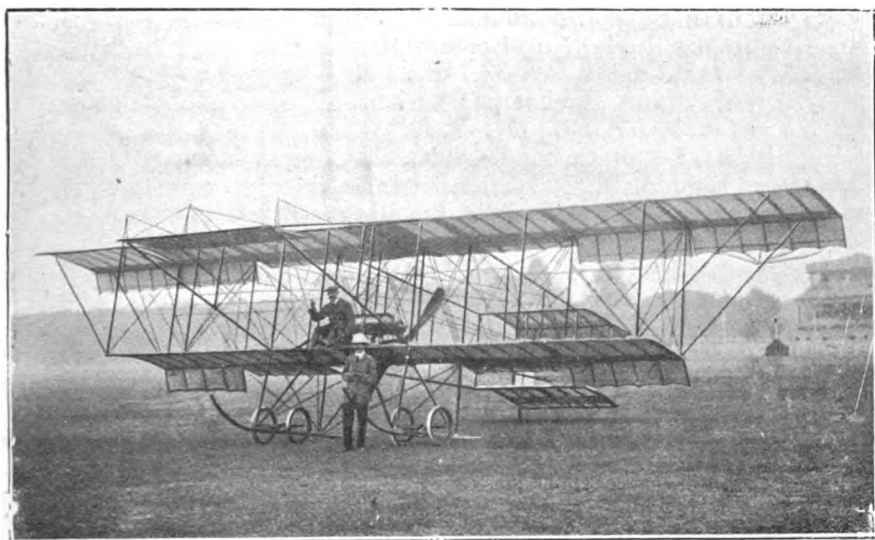
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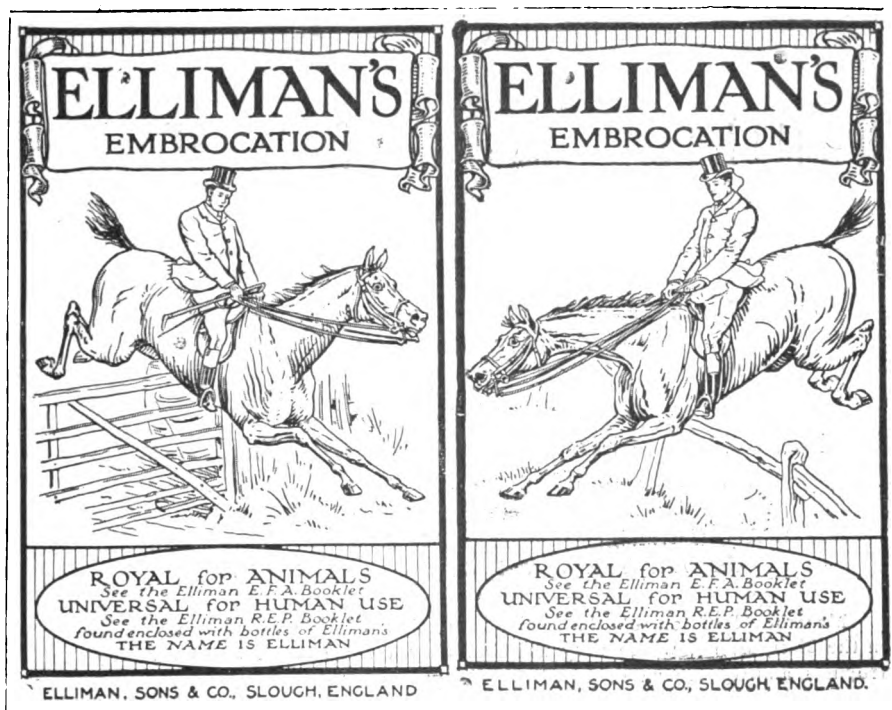
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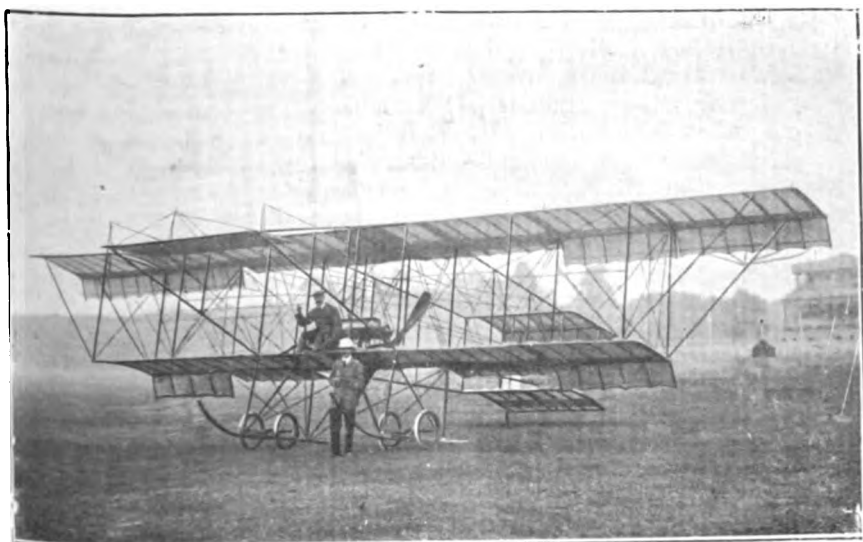
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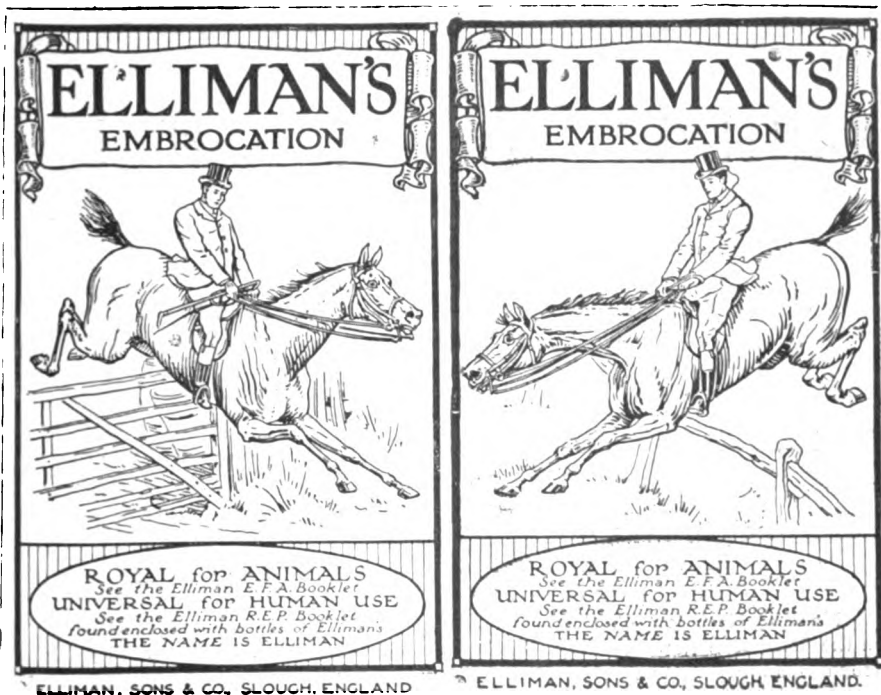
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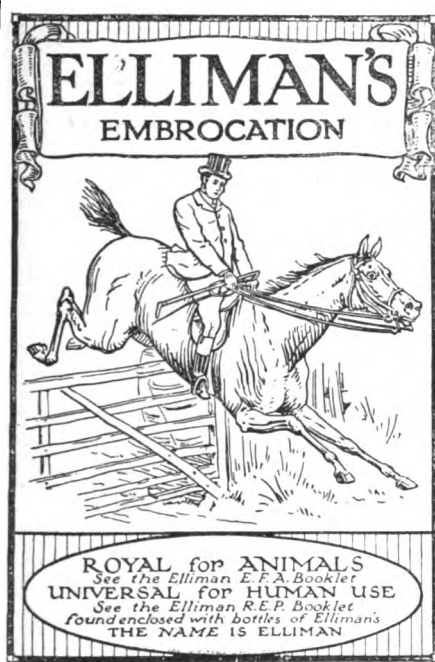
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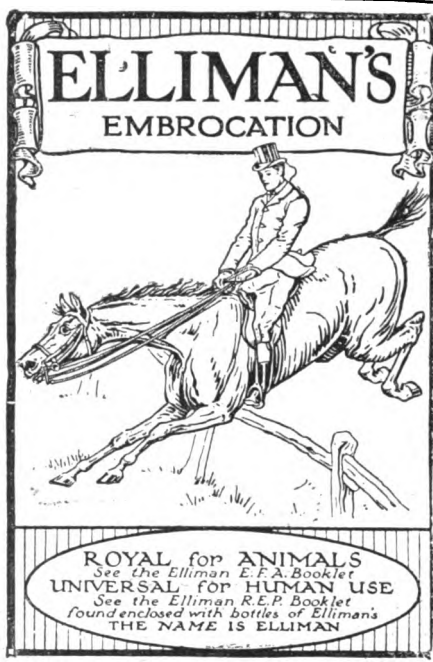
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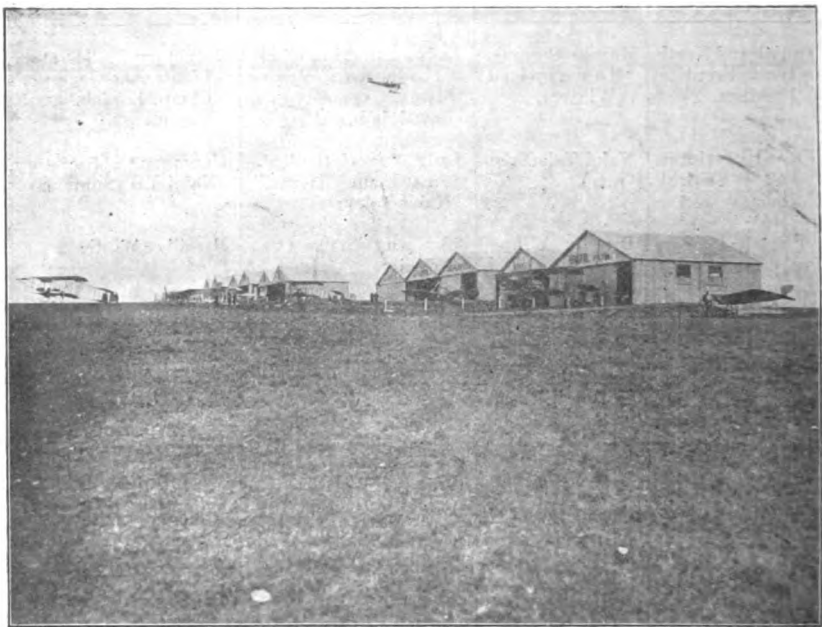
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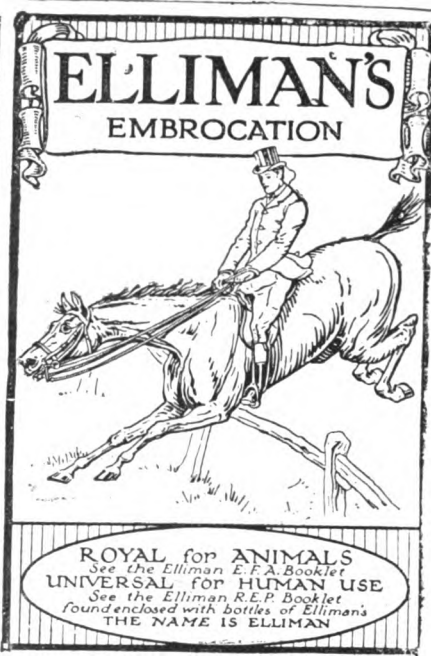
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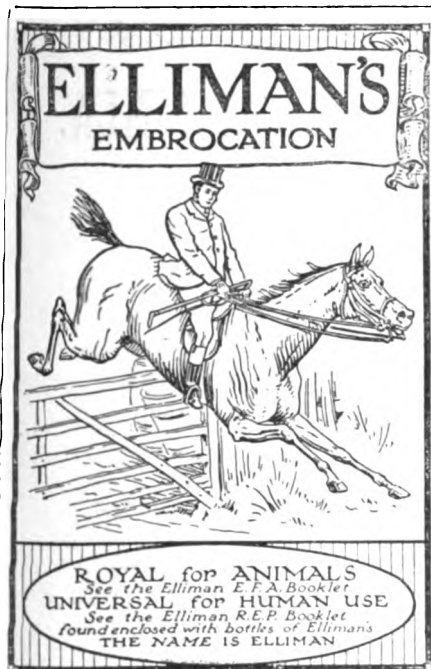
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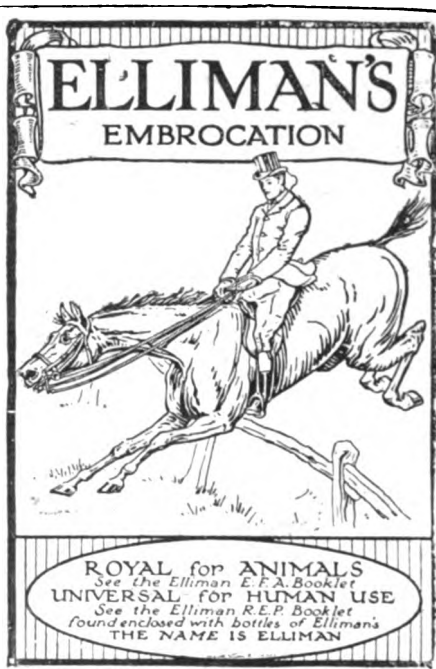
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United Provinces and Central India.	Naini Tal (Summer).	Lady Superintendent, "Langham House," Naini Tal.	Honorary Secretary, Naini Tal (Summer).
	Bareilly (Winter).	38, Cantonments, Bareilly.	Bareilly (Winter).
	Indore.	Honorary Secretary, The Residency, Indore.	Honorary Secretary, The Residency, Indore.
Eastern Bengal and Assam.	Shillong. Jalpaiguri. Dibrugarh. Silchar.	Lady Superintendent, Sisters' Quarters, Dibrugarh.	Honorary Secretary, Government House, Shillong (Summer).
			Government House Dacca (Winter)
Central Provinces	Nagpur ...	Honorary Secretary, Nagpur.	Honorary Secretary, Nagpur.
Baluchistan ...	Quetta ...	Honorary Secretary, Quetta.	Honorary Secretary, Quetta.
Rajputana ...	Ajmere ...	Honorary Secretary, Ajmere.	Honorary Secretary, Ajmere.
Burma ...	Rangoon ... Maymo.	Honorary Secretary, Rangoon.	Honorary Secretary, Rangoon.
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Rajputana ...	Ajmere ...	Honorary Secretary, Ajmere.	Honorary Secretary, Ajmere.
Burma ...	Rangoon Maymo. ...	Honorary Secretary, Rangoon.	Honorary Secretary, Rangoon.
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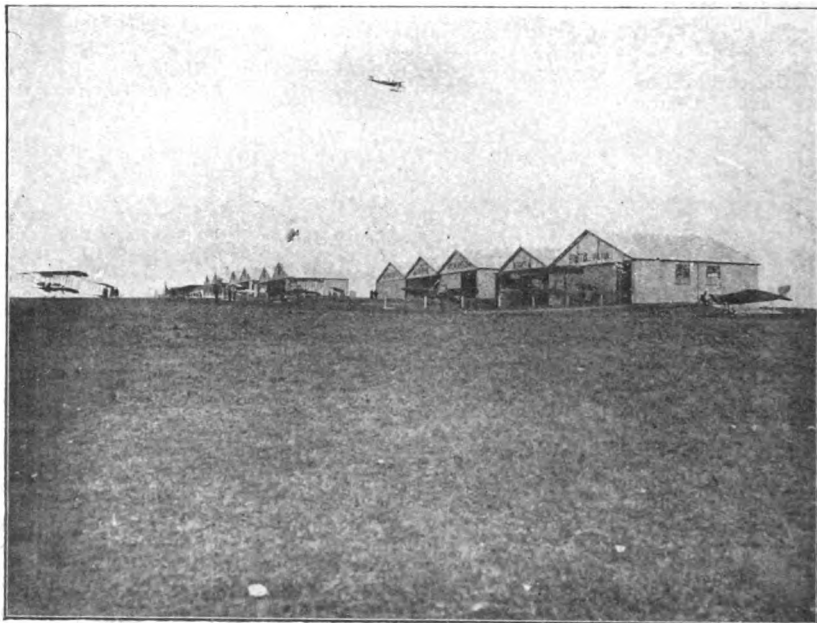
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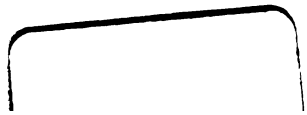
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